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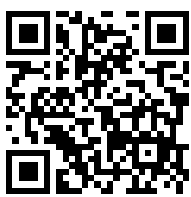

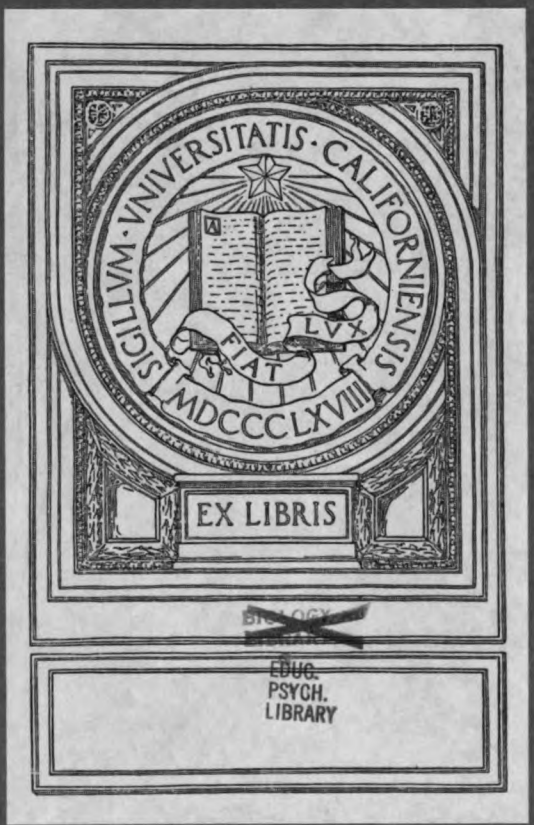

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OF

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BY AUTHORITY OF
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"In adopting our title of the *Journal of Mental Science, published by authority of the Medico-Psychological Association*, we profess that we cultivate in our pages mental science of a particular kind, namely, such mental science as appertains to medical men who are engaged in the treatment of the insane. But it has been objected that the term mental science is inapplicable, and that the term mental physiology or mental pathology, or psychology, or psychiatry (a term much affected by our German brethren), would have been more correct and appropriate; and that, moreover, we do not deal in mental science, which is properly the sphere of the aspiring metaphysical intellect. If mental science is strictly synonymous with metaphysics, these objections are certainly valid; for although we do not eschew metaphysical discussion, the aim of this JOURNAL is certainly bent upon more attainable objects than the pursuit of those recondite inquiries which have occupied the most ambitious intellects from the time of Plato to the present, with so much labour and so little result. But while we admit that metaphysics may be called one department of mental science, we maintain that mental physiology and mental pathology are also mental science under a different aspect. While metaphysics may be called speculative mental science, mental physiology and pathology, with their vast range of inquiry into insanity, education, crime, and all things which tend to preserve mental health, or to produce mental disease, are not less questions of mental science in its practical, that is in its sociological point of view. If it were not unjust to high mathematics to compare it in any way with abstruse metaphysics, it would illustrate our meaning to say that our practical mental science would fairly bear the same relation to the mental science of the metaphysicians as applied mathematics bears to the pure science. In both instances the aim of the pure science is the attainment of abstract truth; its utility, however, frequently going no further than to serve as a gymnasium for the intellect. In both instances the mixed science aims at, and, to a certain extent, attains immediate practical results of the greatest utility to the welfare of mankind; we therefore maintain that our JOURNAL is not inaptly called the *Journal of Mental Science*, although the science may only attempt to deal with sociological and medical inquiries, relating either to the preservation of the health of the mind or to the amelioration or cure of its diseases; and although not soaring to the height of abstruse metaphysics, we only aim at such metaphysical knowledge as may be available to our purposes, as the mechanician uses the formularies of mathematics. This is our view of the kind of mental science which physicians engaged in the grave responsibility of caring for the mental health of their fellow-men may, in all modesty, pretend to cultivate; and while we cannot doubt that all additions to our certain knowledge in the speculative department of the science will be great gain, the necessities of duty and of danger must ever compel us to pursue that knowledge which is to be obtained in the practical departments of science with the earnestness of real workmen. The captain of a ship would be none the worse for being well acquainted with the higher branches of astronomical science, but it is the practical part of that science as it is applicable to navigation which he is compelled to study".—*Sir J. C. Bucknill, M.D., F.R.S.* (*Journ. Ment. Sci.*, vol. vii, 1861, p. 137).

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YEAR BOOK

1933

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HONOURS ROLL.

Year.	Gaskell Medal and Prize.	Bronze Medal and Prize.
1883	—	J. Wiglesworth.*
1884	—	S. R. Macphail.
1885	—	T. D. Greenlees.*
1886	—	—
1887	J. E. D. Mortimer.	J. Wiglesworth.
1888	—	—
1889	T. B. Hyslop.	—
1890	G. M. Robertson.	J. C. Mackenzie. W. J. Smythe.
1891	—	—
1892	Nathan Raw. G. R. Wilson.	G. M. Robertson.
1893	—	A. W. Campbell.
1894	—	C. Beadles.
1895	G. W. F. Macnaughton.	—
1896	W. R. Dawson.	J. Turner.
1897	C. Hubert Bond.	—
1898	—	J. R. Lord.
1899	—	F. G. Crookshank.
1900	Maurice Craig.	C. C. Easterbrook.
1901	W. H. B. Stoddart.	—
1902	G. H. Grills.	—
1903	—	—
1904	—	A. A. D. Townsend.
1905	—	—
1906	J. M. Rutherford.	C. J. Shaw.
1907	—	—
1908	—	S. C. Howard.
1909	H. Devine.	C. F. F. McDowall.
1910	—	H. Morton.
1911	J. G. P. Phillips.	G. H. Garnett.
1912	W. Boyd.	—
1913	W. R. Thomas.	D. McKinley Reid.
1914	—	J. C. Wootton.
1915	—	—
1916	—	—
1917	J. C. Woods.	—
1918	—	—
1919	J. Walker.	R. Eager.
1920	—	—
1921	—	—
1922	—	W. S. Dawson.
1923	J. T. H. Madill.	—
1924	Mary Barkas.	—
1925	W. S. Dawson.	—
1926	G. de M. Rudolf.	P. K. McCowan.
1927	Elizabeth Casson.	—
1928	F. R. Martin.	—
1929	Alexander Walk.	—
1930	G. W. T. H. Fleming.	Duncan Macmillan.
1931	—	J. H. Ewen.
1932	Muriel L. M. Northcote.	W. R. Ashby.

* Prize only.

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MEDALS AND PRIZES.

The Gaskell Gold Medal and Prize.

(Value not less than £30.)

This Medal and Prize was established, at the Annual Meeting held on August 9, 1886, in honour of Samuel Gaskell, Esq., F.R.C.S., at one time Medical Superintendent of the County Asylum, Lancaster, and afterwards for 17 years a Commissioner in Lunacy. Upon his death on March 16, 1886, his sister, Mrs. Holland, gave £1000 to the Association, and other members of the family contributed further sums amounting to £340. The interest of this sum is given annually as a prize to the candidate who most distinguishes himself in an Examination in the subjects hereunder mentioned.

The examination must be held in England according to the terms of the Trust.

(1) Candidates must produce evidence: (*a*) Of having attained the age of 23. (*b*) Of having been qualified Medical Officers in one or more mental hospitals or clinics in psychiatry in the United Kingdom or elsewhere in the British Empire for at least two years. (*c*) Of possessing the Certificate in Psychological Medicine of this Association or a degree or diploma in Psychological Medicine of one of the Universities or Examining Boards having the power to grant medical qualifications registrable in the British Isles or elsewhere in the British Empire.

(2) Candidates will be examined in: (*a*) Psychology. (*b*) Anatomy, Histology and Physiology of the Nervous System, reproductive and endocrine glands; Pathology of the above, especially in relation to mental disorders. (*c*) The diagnosis, prognosis, treatment and legal relations of mental disorders. (*d*) Clinical cases.

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The Bronze Medal and Prize.

(Value Ten Guineas.)

The Bronze Medal and Prize was established at the Annual Meeting held on August 2, 1882, and is awarded to any assistant medical officer of a mental hospital (public or private) for the best dissertation on a clinical or pathological subject relating to mental disorders.

The following is an abstract of the conditions:

(1) The dissertation to be written in English.

(2) Each dissertation to be distinguished by a motto or device, and accompanied by a sealed envelope containing the name and residence of the author, and having on the outside a motto or device corresponding with that on the dissertation.

(3) The dissertation shall not exceed 10,000 words in length.

(4) The dissertation and every accompanying drawing and preparation will become the property of the Association, to be published in the Journal at the discretion of the Editors.

(5) The dissertations not approved, with their accompanying drawings and preparations, will, upon application within one year, be returned, together with the sealed envelopes unopened; if not claimed within one year they will become the property of the Association.

(6) The dissertations for the year must be delivered to the Registrar before April 30.

(7) No prize will be awarded if none of the dissertations is of sufficient merit.

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Divisional Prizes for Assistant Medical Officers.

(Two Prizes of £10 and £5 respectively.)

The proposal to award Divisional Prizes under the conditions set out below emanated from the Irish Division and was adopted at the Annual Meeting held on July 13, 1911.

(1) Two prizes of £10 and £5 respectively will be awarded annually by the Association (provided sufficient merit be shown) for the best paper read during the preceding calendar year at a Divisional Meeting by an Assistant Medical Officer or Assistant Physician in a Psychiatric or Neurological Institution or Service. (*See also Regulation* No. 7.)

(2) Competitors must be members of the Association.

(3) Only one paper by a competitor can be entered during any competitive year. The same applies to a paper entered by more than one author.*

(4) Only papers certified by the Secretary of the Division (in the absence of the Secretary, the Chairman of the Meeting) to have been read at a meeting of the Division and to be eligible for this competition can be entered. Divisional Secretaries are to withhold their certificates in cases where there has occurred material alterations or additions.

(5) Papers certified as eligible for the competition shall be forwarded to the Registrar not later than April 30 of the following year. They shall be submitted to the Examiners for the Certificate in Psychological Medicine for report and then adjudicated on by the President. Publication shall not invalidate a paper for adjudication.†

(6) The results shall be announced, and the prizes awarded, if any, by the President at the Annual Meeting in the year following the competitive year.

(7) Papers by more than one author can be entered and any prize awarded be divided among the authors.

(8) If in any competitive year one or two papers only are submitted for competition the Council may withhold either or both prizes; or it may, after considering the report of the Adjudicator, and if in its opinion the paper or papers are of outstanding merit, award a first or second or both prizes, at its discretion.

THE CERTIFICATE IN PSYCHOLOGICAL MEDICINE.

This Certificate was founded at the Annual Meeting held on August 4, 1885, and the first examinations were held in 1886.

Candidates must be at least twenty-one years of age, and must produce a certificate of having at least three months' clinical experience of mental disorders, or of having attended a course of lectures on insanity and the practice of a mental hospital (where there is clinical teaching) for a like period, or they shall give such proof of experience in mental disorders as shall, in the opinion of the President, be sufficient.

The examination is held yearly, and is in three parts: (1) Written. (2) Oral. (3) Practical.

Candidates must be registered under the Medical Act (1858) before the certificate is bestowed.

The fee for the examination is £3 3*s*., and intending candidates should communicate with the Registrar, who will supply date and place of examination.

Candidates failing in the examination may present themselves at the next or subsequent examinations on payment of a fee of £1 1*s*.

* This means that the joint authors (though separately eligible) cannot enter another paper in the competitive year.

† The original MS., certified in accordance with Regulation No. 4, is to be submitted. Only under exceptional circumstances can a certified reprint of a published paper be accepted, but a reprint, where possible, should accompany the certified original MS.

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THE INSIGNIA OF THE NURSING CERTIFICATE.

The Certificate of Proficiency in Mental Nursing was founded at the Annual Meeting held on July 24, 1890.

The Nursing Medal.

The Nursing Badge.

The Nursing Badge was founded at the Annual Meeting held on July 11, 1928.

HONORARY CERTIFICATE IN MENTAL NURSING.

1928. H.R.H. The Princess Royal.

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LIST OF CHAIRMEN.

1841. Dr. Blake, Nottingham General Asylum.
1842. Dr. de Vitré, Lancaster Asylum.
1843. Dr. Conolly, Hanwell Asylum.
1844. Dr. Thurnam, The Retreat.
1847. Dr. Wintle, Warneford House.
1848. William Ley, M.R.C.S., Littlemore Asylum.
1851. Dr. Conolly, Hanwell Asylum.
1852. Dr. Wintle, Warneford House.

LIST OF PRESIDENTS.

1854. A. J. Sutherland, M.D., St. Luke's Hospital, London
1855. J. Thurnam, M.D., Wilts County Asylum.
1856. J. Hitchman, M.D., Derby County Asylum.
1857. Forbes Winslow, M.D., Sussex House, Hammersmith.
1858. John Conolly, M.D., Hanwell Asylum.
1859. Sir Charles Hastings, D.C.L., Worcester.
1860. J. C. Bucknill, M.D., Devon County Asylum.
1861. Joseph Lalor, M.D., Richmond Asylum, Dublin.
1862. John Kirkman, M.D., Suffolk County Asylum.
1863. David Skae, M.D., Royal Asylum, Edinburgh.
1864. Henry Munro, M.D., Brook House.
1865. Wm. Wood, M.D., Kensington House.
1866. W. A. F. Browne, M.D., Commissioner in Lunacy for Scotland.
1867. C. A. Lockhart Robertson, M.D., Haywards Heath Asylum.
1868. W. H. O. Sankey, M.D., Sandywell Park, Cheltenham.
1869. T. Laycock, M.D., Edinburgh.
1870. Robert Boyd, M.D., Wells Asylum.
1871. Henry Maudsley, M.D., The Lawn, Hanwell.
1872. Sir James Coxe, M.D., Commissioner in Lunacy for Scotland.
1873. Harrington Tuke, M.D., Chiswick House.
1874. T. L. Rogers, M.D., Rainhill Asylum.
1875. J. F. Duncan, M.D., Dublin.
1876. W. H. Parsey, M.D., Warwick County Asylum.
1877. G. Fielding Blandford, M.D., London.
1878. Sir J. Crichton-Browne, M.D., Lord Chancellor's Visitor in Lunacy.
1879. J. A. Lush, M.D., Fisherton House.
1880. G. W. Mould, M.R.C.S., Royal Asylum, Cheadle.
1881. D. Hack Tuke, M.D., London.
1882. Sir W. T. Gairdner, M.D., Glasgow.
1883. W. Orange, M.D., State Criminal Lunatic Asylum, Broadmoor.
1884. Henry Rayner, M.D., Hanwell Asylum.
1885. J. A. Eames, M.D., District Asylum, Cork.
1886. Sir Geo. H. Savage, M.D., Bethlem Royal Hospital.
1887. Sir Fred. Needham, M.D., Barnwood House.
1888. Sir T. S. Clouston, M.D., Royal Asylum, Edinburgh.
1889. H. Hayes Newington, F.R.C.P., Ticehurst House.
1890. David Yellowlees, M.D., Royal Asylum, Glasgow.
1891. E. B. Whitcombe, M.R.C.S., City Asylum, Birmingham.
1892. Robert Baker, M.D., The Retreat.
1893. J. Murray Lindsay, M.D., Derby County Asylum.
1894. Conolly Norman, F.R.C.P.I., Richmond Asylum, Dublin.
1895. David Nicolson, *C.B.*, M.D., State Criminal Lunatic Asylum, Broadmoor.
1896. William Julius Mickle, M.D., Grove Hall.
1897. Thomas W. McDowall, M.D., Northumberland Asylum.
1898. A. R. Urquhart, M.D., James Murray's Royal Asylum, Perth.
1899. J. B. Spence, *O.B.E.*, M.D., Burntwood Asylum, Lichfield.
1900. Fletcher Beach, M.B., London.
1901. Oscar T. Woods, M.D., District Asylum, Cork.
1902. J. Wiglesworth, M.D., Rainhill Asylum.

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1903. Ernest W. White, *C.B.E.*, M.B., City of London Asylum, Stone.
1904. R. Percy Smith, M.D., London.
1905. T. Outterson Wood, M.D., London.
1906. Sir Robert Armstrong-Jones, *C.B.E.*, M.D., Claybury Asylum.
1907. P. W. MacDonald, M.D., Dorchester County Asylum.
1908. Chas. A. Mercier, M.D., Flower House.
1909. W. Bevan-Lewis, M.Sc., West Riding Asylum, Wakefield.
1910. Sir John Macpherson, M.D., Commissioner in Lunacy for Scotland.
1911. Wm. R. Dawson, *O.B.E.*, M.D., Inspector of Lunatic Asylums, Dublin.
1912. J. Greig Soutar, M.B., Barnwood House.
1913. James Chambers, M.D., The Priory.
1914–18. David G. Thomson, *C.B.E.*, M.D., Norfolk County Asylum.
1918. John Keay, *C.B.E.*, M.D., Bangour Village.
1919. Bedford Pierce, M.D., The Retreat.
1920. William F. Menzies, M.D., Cheddleton Mental Hospital.
1921. Sir Hubert Bond, *K.B.E.*, M.D., Commissioner, Board of Control.
1922. G. M. Robertson, M.D., Royal Mental Hospital, Morningside, Edinburgh.
1923. Edwin Goodall, *C.B.E.*, M.D., Cardiff City Mental Hospital.
1924. Michael J. Nolan, L.R.C.P.&S.Irel., Downpatrick Asylum.
1925. Sir Frederick W. Mott, *K.B.E.*, M.D., London.
1926. John R. Lord, *C.B.E.*, M.D., Horton Mental Hospital, Epsom.
1927. Hamilton Marr, M.D., Commissioner, General Board of Control for Scotland.
1928. J. Shaw Bolton, D.Sc., M.D., West Riding Mental Hospital, Wakefield.
1929. Nathan Raw, *C.M.G.*, M.D., F.R.C.S.E., F.R.S.E., Lord Chancellor's Visitor in Lunacy.
1930. T. Saxty Good, *O.B.E.*, M.A., M.R.C.S., L.R.C.P., Oxford County and City Mental Hospital, Littlemore.
1931. R. R. Leeper, L.R.C.P.I., F.R.C.S.I., St. Patrick's Hospital, Dublin.
1932. R. B. Campbell, M.D., F.R.C.P.E., Stirling District Mental Hospital, Larbert.

LIST OF MAUDSLEY LECTURERS.

1920. Sir J. Crichton-Browne, LL.D., D.Sc., M.D., F.R.S.
1921. Sir F. W. Mott, *K.B.E.*, LL.D., M.D., F.R.C.P., F.R.S.
1922. Sir M. Craig, *C.B.E.*, M.A., M.D., F.R.C.P.
1923. Charles Kirk Clarke, LL.D., M.D.
1924. J. Carswell, F.R.F.P.S.
1925. Joseph Shaw Bolton, D.Sc., M.D., F.R.C.P.
1926. George M. Robertson, M.D., F.R.C.P.E., F.R.C.S.E.
1927. Edwin Goodall, *C.B.E.*, M.D., F.R.C.P.
1928. Sir John Macpherson, *C.B.*, M.D., F.R.C.P.E.
1929. Charles E. Spearman, Ph.D., F.R.S.
1930. Sir Henry Alfred McCardie.
1931. Sir Hubert Bond, *K.B.E.*, LL.B., D.Sc., M.D., F.R.C.P.
1932. Sir Edward Farquhar Buzzard, Bart., *K.C.V.O.*, M.A., M.D., F.R.C.P.
1933. Adolf Meyer, M.D.

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HONORARY MEMBERS.

1932. Armstrong-Jones, Sir Robert, *C.B.E.*, D.Sc., M.D., B.S., F.R.C.P., F.R.C.S., F.S.A., *D.L.*, *J.P.*, 9, Bramham Gardens, London, S.W. 5 (and Plâs Dinas, Carnarvon, North Wales). (Gresham Prof. of Physic.) (*Ord. Mem. since* 1882; *Gen. Sec.*, 1897–1906; PRESIDENT, 1906–7.)

1928. Bleuler, Eugen, Prof. Dr., Zollikerstrasse 98, Zollikon bei Zürich, Switzerland.

1900. Blumer, G. Alder, M.D., L.R.C.P.Edin., Superintendent-Emeritus, Butler Hospital; 196, Blackstone Boulevard, Providence, R.I., U.S.A. (*Ord. Mem.*, 1890.)

1928. Bond, Sir Hubert, *K.B.E.*, D.Sc., M.D.Edin., LL.B.Lond., F.R.C.P., M.P.C., Senior Commissioner, Board of Control, Caxton House West, Tothill Street, S.W. 1. (Emeritus Lect. on Psychiat., Middlx. Hosp.) (*Ord. Mem.*, 1892; *General Secretary*, 1906–12; PRESIDENT, 1921–22.)

1900. Bresler, Johannes, Sanitätsrat Dr., Director of the Provincial Mental Hospital, Kreuzburg, Oberschlesien, Germany; Editor, *Psychiatrisch-neurologische Wochenschrift.* (*Corr. Mem.*, 1896.)

1932. Briggs, L. Vernon, M.D., 64, Beacon Street, Boston, Mass., U.S.A. (*Corr. Mem. since* 1923.)

1902. Brush, Edward N., M.D., Superintendent-Emeritus, Sheppard and Enoch Pratt Hospital, Towson, Maryland; 2012, Greenberry Road, Mount Washington, Baltimore, Md., U.S.A.

1925. Chamberlain, Rt. Hon. Arthur Neville, *M.P.*, 37, Eaton Square, London, S.W. 1.

1931. Chambers, James, M.A., M.D., "Estia", Highdown Road, Roehampton, S.W. 15. (*Ord. Mem. since* 1888; *Asst. Editor*, 1900–05, and *Co-Editor of Journal*, 1905–14; PRESIDENT, 1913–14; *Treasurer*, 1917–31.)

1909. Collins, Sir Wm. Job, *K.C.V.O.*, B.Sc., M.D., M.S., F.R.C.S., 1, Albert Terrace, Regent's Park, London, N.W. 1.

1912. Considine, Thomas Ivory, L.R.C.P., F.R.C.S.Irel., Medical Superintendent, Central Criminal Asylum, Dundrum, co. Dublin.

1876. Crichton-Browne, Sir J., LL.D., D.Sc., M.D.Edin., F.R.S., 45, Hans Place, London, S.W. 1. (*Ord. Mem.*, 1863; PRESIDENT, 1878.)

1930. Cushing, Harvey, *C.B.*, A.M., LL.D., Sc.D., Litt.D., M.D., M.Ch., F.R.C.S., Professor of Surgery, Harvard University, Cambridge, Mass., U.S.A.

1924. Dawson, Lt.-Col. W. R., *O.B.E.*, B.A., M.D., B.Ch.Dubl., F.R.C.P.Irel., D.P.H., M.P.C., 18, Brock Street, Bath. (*Ord. Mem.*, 1894; PRESIDENT, 1911–12; *Co-Editor of Journal*, 1920–21.)

1923. Ellis, Henry Havelock, L.S.A., 24, Holmdene Avenue, Herne Hill, S.E. 24.

1922. l'Hermitte, Dr. Jacques Jean, Médecin de l'Hospice Paul Brousse, Paris; 9, rue Marbeuf, Paris (VIII^{e}), France.

1930. Janet, Pierre, M.D., Member of the Institute of France; Professor of Psychology, College of France; 54, Rue de Varenne, Paris (VII^{e}).

1930. von Jauregg, Hofrat Prof. Julius R. Wagner, M.D., late Professor of Psychiatry, University of Vienna; 1, Landesgerichtstr. 18, Vienna.

1924. McDougall, William, LL.D., M.B., F.R.S., Professor of Psychology in Duke University, Durham, North Carolina, U.S.A.

1932. McDowall, Thomas W., M.D., L.R.C.S., "Burwood", Wadhurst, Sussex. (*Ord. Mem. since* 1870; PRESIDENT, 1897–8.)

1928. Macmillan, Rt. Hon. Lord, M.A., LL.D., Lord of Appeal in Ordinary; 44, Grosvenor Road, Westminster, S.W. 1.

1910. Macpherson, Sir John, *C.B.*, M.D., C.M., F.R.C.P.Edin., "Hillside", Cleeve, nr. Bristol. (*Ord. Mem.*, 1886; PRESIDENT, 1910–11.)

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1921. Maudsley, Sir Henry Carr, *K.C.M.G.*, *C.B.E.*, M.D., B.S., F.R.C.P., Consulting Physician, Melbourne Hospital, Victoria; 8, Collins Street, Melbourne.
1926. Meyer, Adolf, M.D., Psychiatrist in Chief, Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore, Md., U.S.A.

1931. Nolan, Michael James, L.R.C.P.I., L.R.C.S.I., *J.P.*, Consulting Visitor-in-Lunacy to the Lord Chief Justice of Northern Ireland, and to the Chief Justice, Irish Free State; Medical Superintendent, Down County Mental Hospital, Downpatrick. (*Ord. Mem. since* 1888; PRESIDENT, 1924–5.)

1922. Pactet, Dr. François Florentin, Médecin en chef de l'Asile de Villejuif; 94, Avenue de la République, Villejuif, Seine, France.
1929. Pavlov, Ivan Petrovitch, M.D., Director of the Physiological Laboratories, Institute of Experimental Medicine and Academy of Science, Leningrad.

1927. Rolleston, Sir Humphry Davy, *Bt.*, *K.C.B.*, D.C.L., LL.D., D.Sc., M.D., F.R.C.P., Physician Extraordinary to H.M. the King; "Martins", Scotlands Lane, Haslemere, Surrey.
1923. Rose, Lt.-Col. Sir Arthur, *D.S.O.*, Chairman, General Board of Control for Scotland, 25, Palmerston Place, Edinburgh.

1924. Sandhurst, Rt. Hon. Lord, Barrister-at-Law; Lord Chancellor's Visitor in Lunacy; Edgebrook, Sheringham, Norfolk.
1911. Semelaigne, Dr. Réné, 59, Boulevard de Montmorency, Paris (XVI^{e}), France. (*Corr. Mem.*, 1893.)
1929. Sherrington, Sir Charles Scott, *O.M.*, *G.B.E.*, M.A., LL.D., D.Sc., M.D., F.R.C.P., F.R.C.S., F.R.S., Wayntlete Professor of Physiology, Oxford; 9, Chadlington Road, Oxford.
1927. Smith, Robert Percy, M.D., B.S.Lond., F.R.C.P., 42, Albion Street, London, W. 2. (*Ord. Mem.*, 1885; *General Secretary*, 1896–97; *Chairman, Educational Committee*, 1899–1903; PRESIDENT, 1904–05.)

1929. Tanzi, Eugenio, M.D., Professor of Psychiatry, Direttore, Clinica Psichiatrica di S. Salvi, Florence, Italy.
1901. Toulouse, Dr. Edouard, Médecin des Asiles de la Seine; 1, Rue Cabanis, Paris (XIV^{e}), France.

1923. Willis, Sir Frederick James, *K.B.E.*, *C.B.*, Church House, Bramley, Guildford.
1926. Winkler, C., M.D., 35, Heerenstraat, Utrecht, Holland. (*Corr. Mem.*, 1924.)

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CORRESPONDING MEMBERS.

1928. Bliss, Malcolm Andrews, M.D., Consultant in Neuro-Psychiatry, St. Luke's Hospital; 301, Himboldt Buildings, St. Louis, Minn., U.S.A.
1911. Boedeker, Geheimer Sanitätsrat, Prof. Justus Karl Edmund, Director, Zehlenhof Asylum; Margaretenstr. 8, Berlin.
1929. Bouman, K. Herman, M.D., Professor of Psychiatry and Director of the University Psychiatric Clinic, Jan Luykenstraat 24, Amsterdam.
1929. Buscaino, V. M., M.D., Professor of Psychiatry, University of Catania, Sicily.
1897. Buschan, Sanitätsrat Dr. med. et phil. G., Friedrich Carlstrasse 7, Stettin, Germany.

1930. Campbell, Charles Macfie, M.D., Professor of Psychiatry, Harvard Medical School; Director, Boston Psychopathic Hospital; 74, Fenwood Road, Boston, Massachusetts, U.S.A.
1927. Charpentier, René, M.D., Secrétaire Général de la Société Medico-Psychologique de Paris; 119, rue Perrouet, Neuilly s/Seine (Seine), France.
1904. Coroleŭ, Wilfrid, Medico forense del distrito de la Barceloneta, Aribau, 31, Barcelona, Spain.
1924. Cotton, Henry A., A.M., M.D., Medical Director Emeritus and Director of Research, State Hospital, Trenton, New Jersey, U.S.A.
1896. Cowan, F. M., M.D., 109, Perponcherstraat, The Hague, Holland.

1929. Ebaugh, Franklin G., A.B., M.D., Professor of Psychiatry, University of Colorado; Director, Colorado Psychiatric Hospital; 4200, East Ninth Avenue, Denver, Colorado, U.S.A.
1930. Evensen, Dr. Hans, Medical Director, Gaustad State Hospital, Vinderen, Norway; Commissioner in Legal Medicine for Norway; President, Norwegian Psychiatric Society.

1911. Falkenberg, Sanitätsrat, Dr. Wilhelm, Berlin-Friedenau, Ringstr. 5.
1907. Ferrari, Giulio Cesare, M.D., Director, Manicomio Provinciale, Imola, Bologna, Italy.
1930. Flournoy, Dr. Henri, 6, Rue de Mounetier, Geneva, Switzerland.
1911. Friedländer, Prof. Dr. Adolf Albrecht, Haus Sonnblick, Littenweiler, bei Freiburg i/Baden, Germany.

1931. Genil-Perrin, Dr., Chief Physician, Seine Department Mental Hospitals; General Secretary, French League for Mental Hygiene; 99, Avenue de la Bourdonnais, Paris.
1901. Gommès, Dr. Marcel, 5, Rue Parrot, Paris (XII^{e}).

1930. Haškovec, Prof. Dr. Ladislav, Professor of Nervous Diseases in the Charles University, Prague, Czecho-Slovakia.
1931. Hincks, Clarence Meredith, A.B., M.D., General Director of the National Committee for Mental Hygiene, 450, Seventh Avenue, New York, U.S.A.

1931. Jouchtchenko, Prof. A. J., Director, Ukrainian Government Institute of Clinical Psychiatry and Social Mental Hygiene, Kharkov, Ukraine, U.S.S.R., Konuchennaia 34.

1928. Kappers, C. U., Ariëns, M.D., Director, Netherlands Central Institution for Brain Research, Amsterdam.
1928. Kirby, George H., LL.D., M.D., Professor of Psychiatry, Columbia University; Director, Psychiatric Institute, New York City, U.S.A.

1932. May, James V., M.D., Medical Superintendent, Boston State Hospital, Dorchester Center Station, Boston, Mass., U.S.A.
1930. Miyake, Dr. Koichi, Professor of Psychiatry, Tokio Imperial University; Director, Tokio Municipal Matsuzawa Psychopathic Hospital, Japan.
1909. Moreira, Prof. Dr. Juliano, Directeur General de l'Assistance aux Aliénés; Praia da Saudade 288, Rio de Janeiro, Brazil.
1931. Moreno, Dr. Samuel Ramirez, Director, Manicomio General, Mexico City.
1922. Morowoka, Dr. T., Owada, 102, Shibuya, Tokyo, Japan.

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1929. Pameijer, J. H., M.D., Bildersstraat 22, The Hague.
1928. Pighini, Giacomo, M.D., Professor of Psychiatry and Director, Laboratori Scientifici, Instituto Psichiatrico di S. Lazzaro, S. Maurizio, Reggio Emilia, Via De Amicis 10, Italy.
1909. Pilcz, Prof. Dr. Alexander, VIII/2 Alserstrasse 43, Vienna, Austria.
1929. Pratt, G. K., M.D., Assistant Medical Director, National Committee for Mental Hygiene; 370, Seventh Avenue, New York, U.S.A.

1931. Riedel, Dr. Gustavo, Director, Hospital-Psychopathic Colony of Engenbo de Dentro, Rio de Janeiro, Brazil; Hon. President, Brazilian League for Mental Hygiene; Vice-President, Brazilian Society of Psychiatry.
1931. Roemer, Dr. med. Hans, Director, Institute for Mental Diseases, Illenau, Baden, Germany; Secretary, German Association for Mental Hygiene; Secretary, Health Welfare Committee, Baden.
1931. Ruggles, Dr. Arthur H., Medical Superintendent, Butler Hospital, Providence, R.I., U.S.A.; Lecturer in Psychiatry, Yale University, New Haven; Chairman, Executive Committee of the National Committee for Mental Hygiene.

1922. Sano, Dr., Directeur de la Colonie de Gheel, Belgium.
1929. Scheer, W. M. van der, M.D., Psychiatrisch-Neurologische Kliniek, Groningen, Holland.
1930. Strecker, Edward A., M.D., Professor of Nervous and Mental Diseases, Jefferson Medical College; 111, North Forty-ninth Street, Philadelphia, U.S.A.
1929. Stuurman, F. J., M.D., Secretary, Dutch Association for Psychiatry and Neurology; Oegstgeest, near Leyden, Holland.

1927. Targowla, René, M.D., *Chev. Leg. Hon.*, 169, Rue de L'Université, Paris (VII^e).
1929. Thom, Douglas A., M.D., Professor of Mental Hygiene, Tuft Medical School; 520, Commonwealth Avenue, Boston, Mass., U.S.A.

1930. Weygandt, Dr. phil. et med. Wilhelm, Professor of Psychiatry and Director, Psychiatric Clinic, University of Hamburg; Friedrichsbergerstr. 60, Hamburg.
1929. Wiersma, E. D., Professor of Psychiatry and Director of the University Psychiatric Clinic, Groningen Holland.
1930. Williams, Frankwood E., D.Sc., M.D.; Editor, *Mental Hygiene and Mental Hygiene Bulletin*; 44, West 12th Street, New York City.
1928. Wimmer, August, M.D., Professor of Psychiatry, University of Copenhagen, Denmark.

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ORDINARY MEMBERS OF THE ASSOCIATION.

Alphabetical List of Ordinary Members of the Association on January 1, 1933, with the year in which they joined.

1928. Abd-el-Hakeem, Mohammed, M.B., B.Ch.Cairo, D.P.M., Assistant Medical Officer, Mental Hospital, Khanka, Egypt.

1910. Adam, George Henry, M.R.C.S., L.R.C.P.Lond., Resident Physician, Malling Place, West Malling, Kent.

1931. Adamson, James Weeden Woodhams, M.D.Durh., M.R.C.S., L.R.C.P.Lond., L.S.A., Commissioner of the Board of Control (England and Wales); 14, Norfolk Square, Hyde Park, W. 2.

1919. Adey, J. K., M.B., C.M.Melb., Receiving House, Royal Park, Melbourne, Victoria, Australia.

1886. Agar, Samuel Hollingsworth, jun., B.A.Camb., L.S.A., M.R.C.S.Eng., Hurst House, Henley-in-Arden.

1923. Ahern, John Maurice, M.B., B.Ch.R.U.I., L.R.C.P.&S.Irel., Medical Officer, H.M. Prison, Parkhurst, I.W.

1923. Ainsworth, Cyrus Gerald, M.A., LL.B., M.B., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Graylingwell Mental Hospital, Chichester.

1931. Allan, Samuel Miller, M.B., Ch.B.Glasg., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

1932. Allen, James Stewart, M.B., B.Ch., B.A.O.Belf., Assistant Medical Officer, Antrim Mental Hospital, Northern Ireland.

1926. Albiston, Norman Arthur, M.B., B.S.Syd., D.P.M., 32, Darling Road, East Malvern, Victoria, Australia.

1924. Alexander, Douglas Reid, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Colney Hatch Mental Hospital, London, N. 11.

1922. Alexander, Marion Cameron, M.B., B.Ch., B.A.O.Belf., Dipl. Psych. Edin., Assistant Medical Officer, Storthes Hall Mental Hospital, Kirkburton, near Huddersfield.

1899. Allman, Dorah Elizabeth, M.B., B.Ch.R.U.I., Assistant Medical Officer, County Mental Hospital, Armagh.

1929. Anderson, John Colquhoun, B.Sc., M.B., Ch.B.Glasg., Dipl. Psych., 2, Foremount Terrace, Highburgh Road, Glasgow, W. 2.

1898. Anderson, John Sewell, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Willerby, Hull.

1918. Anderson, William Kirkpatrick, M.D., Ch.B., F.R.F.P.S.Glasg., 2, Woodside Crescent, Glasgow. (Lect. on Ment. Dis., Andr. Coll., Glasg.)

1912. Annandale, James Scott, M.B., Ch.B.Aberd., D.P.M., Medical Superintendent, Kingseat Mental Hospital, Newmachar, Aberdeen.

1904. Archdale, Mervyn Alex., M.B., B.S.Durh., D.P.M., Medical Superintendent, Sunderland Mental Hospital, Ryhope.

1905. Archdall, Mervyn Thomas, L.S.A., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., St. Denys, New Milton, Hants.

1930. Armitage, Bernard William Francis, M.A., M.R.C.S., L.R.C.P., Assistant Medical Officer, Croydon Mental Hospital, Upper Warlingham, Surrey.

1930. Armstrong, Robert William, B.Sc., M.D., B.Ch.Belf., D.P.M., Deputy Medical Superintendent, Ewell Mental Hospital, Epsom, Surrey.

1930. Ashby, William Ross, B.A., M.B., B.Ch.Cantab., M.R.C.S., L.R.C.P., D.P.M., Assistant Medical Officer, Leavesden Mental Hospital; "Merrow Down", King's Langley, Herts.

1927. Atkin, Isaac, M.D., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Park Prewett Mental Hospital, Basingstoke, Hants.

1910. Auden, George Augustus, M.A., M.D., B.Ch.Camb., Ph.D.Birm., F.R.C.P.Lond., D.P.H., F.S.A., School Medical Officer, Education Office, Council House, Margaret Street, Birmingham.

1891. Aveline, Henry Talbot Sydney, M.D.Durh., M.R.C.S., L.R.C.P.Lond., M.P.C., Medical Superintendent, Somerset and Bath County Mental Hospital, Cotford, near Taunton. (*Secretary, S.W. Division*, 1905–11.)

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1922. **Back**, Frederick, M.B., B.S.Lond., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Sunderland Mental Hospital, Ryhope.

1926. **Bailey**, Josiah Reginald, M.B., Ch.B.Glasg., Medical Superintendent, Gogarburn Certified Institution, Corstorphine, Edinburgh.

1909. **Bain**, John, M.A., M.B., Ch.B.Glasg., Medical Superintendent, Derby Borough Mental Hospital, Rowditch.

1913. **Bainbridge**, Charles Frederick, M.B., Ch.B.Edin., Deputy Medical Superintendent, Devon County Mental Hospital, Exminster.

1906. **Baird**, Harvey, M.D., Ch.B.Edin., Medical Superintendent, Periteau House, Winchelsea, Sussex.

1931. **Baker**, John Cotter, M.B., B.Ch., Medical Superintendent, Stretton House, Church Stretton, Salop.

1922. **Banbury**, Percy, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Borough Mental Hospital, Ipswich.

1930. **Barber**, Leonard, M.B., B.S.Durh., L.R.C.P.&S.Edin., L.R.F.P.&S.Glasg., D.P.M., Assistant Medical Officer, City Mental Hospital, Fishponds, Bristol.

1922. **Barclay**, Rachel Mary, M.A., LL.B., M.D.Edin., Dipl. Psych., 2, W. Crosscauseway, Edinburgh.

1904. **Barham**, Guy Foster, M.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Claybury Mental Hospital, Woodford Bridge, Essex.

1919. **Barkas**, Mary Rushton, M.Sc.N.Z., M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, The Lawn, Lincoln.

1927. **Barkas**, Thomas Cook, *O.B.E.*, M.B., B.S.Durh., Resident Medical Officer, Middleton Hall, Middleton St. George, co. Durham.

1923. **Barnes**, Francis Gregory Lawson, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Horton Mental Hospital, Epsom.

1910. **Bartlett**, George Norton, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Gosford House, Kidlington, nr. Oxford. (*Secretary, S.W. Division*, 1916–22.)

1932. **Bates**, Ralph Marshall, F.R.C.S.Eng., L.R.C.P.Lond., Resident Medical Officer, Stoke Park Colony; Parrdown House, Stapleton, Bristol.

1902. **Baugh**, Leonard Dieckmann Hamilton, M.B., Ch.B.Edin., The Pleasaunce, York.

1921. **Beaton**, Thomas, *O.B.E.*, M.D., B.S., F.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Milton, Portsmouth. (Lect. on Ment. Dis., Bethlem Royal Hosp.) (*Assistant Editor*, 1926–27, *and Co-Editor of Journal*, 1927–31.)

1932. **Beccle**, Harold Charles, M.B., B.S., M.R.C.P., M.R.C.S., D.P.M., Assistant Medical Officer, Kent County Mental Hospital, Maidstone.

1913. **Bedford**, Percy William Page, M.D., Ch.B.Edin., Dipl. Psych., Medical Superintendent, Dorset County Mental Hospital, Herrison, near Dorchester.

1922. **Bell**, Andrew Allan, M.B., Ch.B., F.R.F.P.S.Glasg., D.P.M., Pathologist and Assistant Medical Officer, Govan District Asylum, Hawkhead, Glasgow.

1931. **Bell**, George Macdonald, M.B., Ch.B.Edin., Medical Superintendent, Ladysbridge Mental Hospital, Banff.

1931. **Bennett**, Edward Armstrong, *M.C.*, M.A., M.D., D.P.M., Physician, The Institute of Medical Psychology, London; 97, Harley Street, W. 1.

1914. **Bennett**, James Wodderspoon, M.R.C.S., L.R.C.P.Lond., "Marsden", Babbacombe Road, Torquay, S. Devon.

1914. **Benson**, John Robinson, F.R.C.S.Eng., L.R.C.P.Lond., Resident Physician, Fiddington House, Market Lavington, Wilts, and Laverstock House, Salisbury.

1899. **Beresford**, Edwyn Henry, M.R.C.S., L.R.C.P.Lond., 20, Campion Road, Putney, London, S.W. 15.

1922. **Berkeley-Hill**, Owen Alfred Rowland, M.A., M.D., B.Ch.Oxon, M.R.C.S., L.R.C.P.Lond., Lt.-Col. *I.M.S.*, Medical Superintendent, Ranchi Mental Hospital for Europeans, Kanké, Bihar and Orissa, India.

1912. **Berncastle**, Herbert Melbourne, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Croydon Mental Hospital, Upper Warlingham, Surrey.

1927. **Berry**, Richard James Arthur, M.D.Edin.&Melb., F.R.C.S., F.R.S.Edin., Director of Medical Services, Stoke Park Colony, Stapleton, Bristol; "Rufford", Canford Lane, Westbury-on-Trym, Bristol.

1932. **Bhathena**, Sorab Jamasji, Lt.-Col. *I.M.S.*, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., L.M. Dubl., Civil Surgeon, Civil Hospital, Thana, Bombay, India.

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1920. Birch, William Somerset, *M.C.*, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, The Mental Hospital, Bridgetown; "Rosemont", Bridgetown, British West Indies.

1894. Blachford, James Vincent, *C.B.E.*, M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., M.P.C., Milverton House, Long Ashton, Somerset.

1898. Blair, David, M.A., M.D., C.M.Glasg., Medical Superintendent, Lancashire County Mental Hospital, Prestwich, Manchester. (Lect. on Ment. Dis., Univ. of Manchester.)

1919. Blake, Stanley, L.R.C.P.&S.Irel., Assistant Medical Officer, Grangegorman Mental Hospital, Dublin.

1932. Blyth, William, M.B., Ch.B.Glasg., Assistant Medical Officer, Riccartsbar Mental Hospital, Paisley.

1900. Bolton, Joseph Shaw, D.Sc., M.D., B.S., F.R.C.P.Lond., Medical Director, West Riding Mental Hospital, Wakefield. (Prof. of Ment. Dis., Univ. of Leeds.) (PRESIDENT, 1928–29.)

1922. Bostock, John, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Lauriston, Wickham Terrace, Brisbane, Queensland, Australia.

1918. Bower, Cedric William, L.M.S.S.A., Physician-Superintendent, Springfield House, near Bedford.

1926. Boyd, William, M.B., Ch.B.Edin., D.P.H., D.P.M., Medical Superintendent, Fife and Kinross District Asylum, Cupar, Fife.

1898. Boyle, A. Helen A., M.D.Brux., L.R.C.P.&S.Edin., 9, The Drive, Hove, Sussex.

1926. Braithwaite, Joseph, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer, Cumberland and Westmorland Mental Hospital, Garlands, Carlisle.

1922. Bramwell, Edwin, M.D., F.R.C.P.Edin. & Lond., F.R.S.Edin., 23, Drumsheugh Gardens, Edinburgh. (Physician, Royal Infirmary, and Prof. of Clin. Med., Univ. of Edin.)

1911. Brander, John, M.D., Ch.B.Edin., M.R.C.P.Lond., D.P.M., Medical Superintendent, Colney Hatch Mental Hospital, New Southgate, N. 11.

1925. Brennan, Richard Dominick, M.B., B.Ch.N.U.I., Assistant Medical Officer, District Mental Hospital, Waterford.

1930. Bristowe, Hubert C., M.D.Lond., M.R.C.S., L.R.C.P.Lond., M.P.C., Hon. Major *R.A.M.C.*, Medical Officer, Yatton Hall Home for Feeble-minded Children; Wrington, Somerset.

1922. Brock, Arthur John, M.D., Ch.B.Edin., Medical Superintendent, Garth Hill House, North Queensferry, Fife.

1924. Brown, Basil William, M.B., B.S.Lond., L.M.S.S.A., D.P.M., The Priory, Roehampton, London, S.W. 15.

1905. Brown, Harry Egerton, *O.B.E.*, M.D., Ch.B.Glasg., M.P.C., 47, Yorkshire House, Field Street, Durban, Natal.

1908. Brown, Robert Dods, M.D., Ch.B., F.R.C.P.Edin., D.P.H., Dipl. Psych., Physician-Superintendent, Royal Mental Hospital, Aberdeen.

1916. Brown, William, D.Sc.Lond., M.A., M.D., B.Ch.Oxon., F.R.C.P.Lond., 88, Harley Street, London, W. 1. (Wilde Reader in Mental Philosophy, Univ. Oxford.)

1917. Bruce, Alexander Ninian, D.Sc., M.D., F.R.C.P.Edin., 8, Ainslie Place, Edinburgh. (Lect. on Neurol., Univ. of Edin.)

1932. Bruce, David Charles, M.B., Ch.B.Edin., Dipl. Psych. Edin., Medical Superintendent, Criminal Lunatic Department and State Institution for Defectives, Perth.

1928. Bruce, David Kennedy, M.B., Ch.B.Glasg., D.P.M., Senior Assistant Medical Officer, Storthes Hall Mental Hospital, Kirkburton, near Huddersfield.

1893. Bruce, Lewis C., *M.C.*, M.D., F.R.C.P.Edin., M.P.C., Medical Superintendent, Perth District Asylum, Druid Park, Murthly. (*Secretary, Scottish Division*, 1901–1907; *Co-Editor of Journal*, 1911–1916.)

1927. Brunlees, Oswald, L.R.C.P.&S.Edin., 75, Denmark Villas, Hove, Sussex.

1913. Brunton, George Llewellyn, M.D., Ch.B.Edin., Medical Superintendent, City Mental Hospital, Mapperley Hill, Nottingham.

1920. Bryce, William Henderson, M.B., C.M.Edin., Gifford Bank, Gifford, East Lothian.

1912. Buchanan, William Murdoch, M.B., Ch.B.Glasg., Medical Superintendent, Kirklands Mental Hospital, Bothwell, Lanarkshire. (*Secretary, Scottish Division since* 1920.)

1928. Burke, Noel Hawley Michael, M.R.C.S., L.R.C.P.Lond., D.P.M., D.M.R.E.Camb., Medical Superintendent, Cell Barnes Colony, St. Albans, Herts.

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1932. **Burns**, Robert Henderson, B.A.Cantab., M.R.C.S., L.R.C.P., Assistant Medical Officer, Claybury Mental Hospital, Woodford Bridge, Essex.

1924. **Bushe**, Charles Kendal, *O.B.E.*, B.A., M.D., B.Ch.Dubl., Surg.-Capt. R.N., c/o Admiralty Medical Department, London, S.W. 1.

1921. **Buzzard**, Sir Edward Farquhar, Bart., *K.C.V.O.*, M.A., M.D., B.Ch.Oxon., F.R.C.P. Lond., Physician to H.M. The King; Regius Professor of Medicine, Oxford University; 85, Banbury Road, Oxford.

1928. **Calder**, Flora Hannah Macdonald, M.A., M.D., D.P.M.Edin., 14, Dalhousie Street, Edinburgh.

1921. **Caldicott**, Charles Holt, *M.B.E.*, M.B., M.R.C.S., L.R.C.P.Lond., Grantbourne, Chobham, Surrey.

1928. **Caldwell**, William Alexander, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, West Park Mental Hospital, Epsom.

1925. **Cameron**, Donald Ewan, M.B., Ch.B.Glasg., D.P.M., Brandon Hospital for Mental Diseases, Brandon, Manitoba, Canada.

1928. **Cameron**, Viola Cameron, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Springfield Mental Hospital Annexe, Kingston Road, New Malden, Surrey.

1897. **Campbell**, Robert Brown, M.D., C.M., F.R.C.P.Edin., Medical Superintendent, Stirling District Mental Hospital, Larbert. (*Secretary, Scottish Division*, 1910–20, *and Chairman*, 1929–30; PRESIDENT, 1932–33.)

1932. **Cannon**, Alexander, M.D., Ch.B., Ph.D., M.A., D.P.M., Assistant Medical Officer, Colney Hatch Mental Hospital, N. 11.

1930. **Cannon**, H. C. A. Tandy, Surgeon Lt.-Commander *R.N.* (Ret.), L.R.C.P.&S.I., Resident Physician, Moorcroft House, Hillingdon, Middlesex.

1927. **Carey**, Catherine, M.B., B.Ch.N.U.I., Assistant Medical Officer, Farnham House, Finglas, co. Dublin.

1905. **Carre**, Henry, L.R.C.P.&S.Irel., Medical Superintendent, Glasgow District Mental Hospital, Woodilee, Lenzie, N.B.

1932. **Carroll**, Denis Charles, M.A.Camb., M.R.C.S., L.R.C.P., 22, Queen Anne Street, W. 1.

1928. **Cassin**, Patrick Joseph, M.D., B.Ch.N.U.I., D.M.D., Assistant Medical Officer, Mental Hospital, Kilkenny, Ireland.

1922. **Casson**, Elizabeth, M.D., Ch.B.Brist., D.P.M., Dorset House, Clifton, Bristol.

1928. **Cates**, Henry Joseph, M.D.Lond., Medical Superintendent, Northwoods House, Winterbourne, Bristol.

1932. **Chalmers**, Edith, M.B., Ch.B.Glasg., Assistant Medical Officer, Chiswick House, Pinner, Middlesex.

1911. **Chambers**, Walter Duncanon, M.A., M.D., Ch.B., F.R.C.P.Edin., M.P.C., Physician Superintendent, James Murray's Royal Asylum; Murray House, Perth.

1928. **Chapman**, Theonie Renée, M.B., B.S.Durh., Assistant Medical Officer, Northumberland Mental Hospital, Morpeth.

1932. **Chapman**, William Noel James, M.B., Ch.B., D.P.H., Dipl. Psych.Edin., Assistant Medical Officer, Lanark District Asylum, Hartwood.

1928. **Chennell**, Eileen Anne, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Holloway Sanatorium, Virginia Water, Surrey.

1923. **Chevens**, Leslie Charles Frederick, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Cheshire County Mental Hospital, Parkside, Macclesfield.

1917. **Chisholm**, Percy, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Superintendent, Queen Mary Hospital, Hammer Springs, New Zealand.

1907. **Chislett**, Charles Game Angus, M.B., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, Stoneyetts, Chryston, Lanark.

1921. **Cholmeley**, Montague Adye, M.R.C.S., L.R.C.P.Lond., D.P.M. (Retired), Heigham Hall, Norwich.

1920. **Clark**, Ronald Murray, M.B., C.M.Edin., 29, Irton Road, Southport.

1907. **Clarke**, Geoffrey, M.D.Lond., Medical Superintendent, London County Mental Hospital, Bexley, Kent.

1907. **Clarkson**, Robert Durward, B.Sc., M.D., C.M., F.R.C.P.Edin., Medical Officer, Royal Scottish National Institution; The Park, Larbert, Stirlingshire. (Lect. on Ment. Deficiency, Univ. of Edin.)

1931. **Clegg**, John Leonard, M.B., Ch.B., D.P.H., Assistant Medical Officer, South Yorkshire Mental Hospital, Sheffield.

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1925. Cobb, Geoffrey Francis, M.R.C.S., L.R.C.P.Lond., D.P.M., M.P.C., Deputy Medical Superintendent, The Manor, Epsom.

1900. Cole, Sydney John, M.A., M.D., B.Ch.Oxon., Medical Superintendent, Wilts County Mental Hospital, Devizes.

1930. Coleman, Stanley Maurice, M.R.C.S., L.R.C.P., D.P.M., Assistant Medical Officer, Dorset County Mental Hospital, Herrison, Dorchester.

1906. Collier, Walter Edgar, M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, Kent County Mental Hospital, Barming Heath, Maidstone.

1903. Collins, Michael Abdy, *O.B.E.*, M.D., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Kent County Mental Hospital, Chartham Downs. (*General Secretary*, 1912–18; *Vice-Chairman, Educational Committee*, 1919–27; *Chairman, S.E. Division, since* 1932.)

1910. Conlon, Thomas Peter, L.R.C.P.&S.Irel., Resident Medical Superintendent, District Mental Hospital, Monaghan.

1921. Connell, Ernest Henry, M.B., Ch.B.Edin., D.P.M., 7, Greenhill Gardens, Edinburgh.

1920. Connell, Oliver George, *M.C.*, L.R.C.P.&S.Irel., Medical Superintendent, St. Andrew's Hospital, Thorpe, Norwich.

1914. Connolly, Victor Lindley, *M.C.*, M.B., B.Ch.Belf., D.P.M., Medical Superintendent, Hants County Mental Hospital, Park Prewett, Basingstoke.

1927. Cook, Leslie Colin, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Fountain Hospital, Tooting Grove, S.W. 17.

1910. Coombes, Percival Charles, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Surrey County Mental Hospital, Netherne, near Coulsdon.

1930. Cooper, Hugh Astley, M.B., B.S.Lond., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, West Park Mental Hospital, Epsom.

1927. Cooper, James Woodman Astley, L.S.A., L.R.C.S., L.R.C.P., Medical Superintendent, Middleton Hall Private Mental Hospital, and Almora Hall, Middleton St. George, Durham.

1928. Copeland, Cecil Leonard, M.B., Ch.B.Liverp., D.P.M., Assistant Medical Officer, West Riding Mental Hospital, Wakefield.

1903. Cormac, Harry Dove, M.B., M.S.Madras, D.P.M., Medical Superintendent, Cheshire County Mental Hospital, Parkside, Macclesfield; Parkside House, Macclesfield. (Lect. on Ment. Dis., Univ. of Manch.) (*Chairman, N. and M. Division*, 1931–32.)

1891. Corner, Harry, M.D., M.R.C.S., L.R.C.P.Lond., M.P.C., Jersey Farm, Sandridge, near St. Albans, Herts.

1910. Coupland, William Henry, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Superintendent, Royal Albert Institution; Albert House, Haverbreaks, Lancaster.

1932. Courtney, Patrick J., M.D.N.U.I., Assistant Medical Officer, Donegal Mental Hospital, Letterkenny.

1931. Couston, Alastair Gordon, L.R.C.P.&S.Edin., Assistant Medical Officer, Cheshire County Mental Hospital, Chester.

1930. Cowie, Charles George, M.A., M.B., C.M., M.P.C., "Bonaccord", Westminster Road, Branksome Park, Bournemouth.

1911. Cox, Donald Maxwell, M.R.C.S., L.R.C.P.Lond., Deputy Medical Superintendent, Hereford County Mental Hospital, Burghill.

1926. Coyne, William Joseph, M.D., B.Ch.N.U.I., D.P.M., Physician, Chiswick House, Pinner; "Clontarf", Barrow Point Avenue, Pinner, Middlesex.

1924. Craig, Alexander, M.B., Ch.B.Aberd., D.P.M., Assistant Physician, Royal Mental Hospital, Aberdeen.

1893. Craig, Sir Maurice, *C.B.E.*, M.A., M.D., B.Ch.Camb., F.R.C.P.Lond., M.P.C., "Salona", East Preston, near Littlehampton, Sussex. (*Secretary, Educational Committee*, 1905–8; *Chairman, Educational Committee*, 1912–19.)

1924. Craig, Roy Neville, M.D.Durh., M.R.C.S., L.R.C.P.Lond., D.P.M., 35, Southernhay West, Exeter.

1911. Crichlow, Charles Adolphus, M.B., Ch.B.Glasg., Senior Assistant Medical Officer, Bangour Village, Uphall, Linlithgowshire.

1930. Crichton-Miller, Hugh, M.A., M.D.Edin., M.D.Pavia, Hon. Director, The Institute of Medical Psychology; 6, Devonshire Place, W. 1.

1915. Crosthwaite, Frederick Douglas, M.B., Ch.B.Edin., D.P.H., Physician Superintendent, West Koppies Mental Hospital, Pretoria, South Africa.

1923. Crow, Norah Annie, M.A.Edin., M.D., B.S.Lond., "Kingsclere", Harrington Road, Brighton.

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1919. **Cuthbert**, James Harvey, M.B., Ch.B.Edin., D.P.M., Medical Superintendent, West Ham Mental Hospital, Goodmayes; "The Leazes", Barley Lane, Goodmayes, Essex.

1930. **Cutts**, George Lambert, M.R.C.S., L.R.C.P.Lond., L.D.S., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom, Surrey; Farmfield, Horton Lane, Epsom.

1907. **Daniel**, Alfred Wilson, B.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Hanwell Mental Hospital, Southall, Middlesex. (*Secretary, Educational Committee*, 1920–27.)

1926. **Darlington**, Arthur, B.A., M.B., B.Ch.Dubl., D.P.H., D.P.M., Deputy Medical Superintendent, Somerset and Bath Mental Hospital, Wells.

1930. **Das**, Banarsi, M.B., B.S.Punjab, D.P.M., Civil Surgeon, Rae Bareli, U.P., India.

1896. **Davidson**, Andrew, M.D., C.M.Aberd., M.P.C., 221, Macquarie Street, Sydney, New South Wales.

1925. **Davidson**, Thomas Wishart, P.D., M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer and Pathologist, City Mental Hospital, Humberstone, Leicester.

1922. **Davie**, Thomas Macnaughton, *M.C.*, M.D., Ch.B.Edin., Ph.D., D.P.M., Barrister-at-Law, Medical Superintendent, East Riding Mental Hospital, Beverley, Yorks.

1931. **Davies**, Sidney, M.B., B.S.Lond., Assistant Medical Officer, North Wales Counties Mental Hospital, Denbigh; Carn Ingli, Denbigh, N. Wales.

1928. **Davies**, Stuart Wyndham, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Officer, H.M. Prison Service; 162, Ducane Road, London, W. 12.

1921. **Davies-Jones**, Charles William Saunderson, M.B., Ch.B.Edin., Medical Superintendent, Isle of Wight Mental Hospital, Whitecroft, Newport.

1920. **Dawson**, William Siegfried, M.A., M.D., B.Ch.Oxon., M.R.C.P.Lond., M.R.C.S.Eng., D.P.M., Prof. of Psychiat., University of Sydney, New South Wales, Australia.

1926. **Deane**, Frederick John, M.B., Ch.B.Edin., D.P.M., Medical Inspector, Ministry of Home Affairs, Northern Ireland; "Belmont", Church Road, Belfast.

1925. **Delany**, John James, L.R.C.P.&S.Irel., 68, Wellington Road, Dublin.

1929. **Denyssen**, John Abraham Felix, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Banstead Mental Hospital, Sutton, Surrey.

1901. **De Steiger**, Adele Isabella, M.D.Lond., Dormansland, Lingfield, Surrey.

1905. **Devine**, Henry, *O.B.E.*, M.D., B.S., F.R.C.P.Lond., M.R.C.S.Eng., M.P.C., Medical Superintendent, Holloway Sanatorium, Virginia Water, Surrey; The Ridge, Virginia Water, Surrey. [Lect. on Psychol., Maudsley Hosp.] (*Assistant Editor*, 1916–1920, *and Co-Editor of Journal*, 1920–27.)

1904. **Devon**, James, L.R.C.P.&S.Edin., F.R.F.P.S.Glasg., 67, Great King Street, Edinburgh.

1924. **Devon**, Martha Davidson, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Isle of Eigg, Inverness-shire.

1932. **Dewar**, Douglas Campbell, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., D.P.M.Lond., Assistant Medical Officer, Renfrew District Asylum, Dykebar, Paisley.

1925. **Dhunjibhoy**, Jal Edulji, M.B., B.S.Bomb., Major *I.M.S.*, Medical Superintendent, The Indian Mental Hospital, Kanké, Ranchi, Bihar and Orissa, India; c/o Lloyds Bank, 6, Pall Mall, S.W. 1.

1921. **Dick**, Alexander, *M.C.*, M.B., Ch.B.Glasg., Deputy Medical Superintendent, Glasgow District Mental Hospital, Woodilee, Lenzie, N.B.

1922. **Dickson**, James, *M.C.*, M.B., Ch.B.Edin., "Whitehill", The Broadway, Thorpe Bay.

1915. **Dillon**, Frederick, M.D., Ch.B.Edin., Medical Superintendent, Northumberland House, Finsbury Park, London, N. 4.

1909. **Dillon**, Kathleen, L.R.C.P.&S.Irel., Assistant Medical Officer, District Asylum, Mullingar.

1905. **Dixon**, J. Francis, M.A., M.D., B.Ch.Dubl., M.P.C., Medical Superintendent, City Mental Hospital, Humberstone, Leicester.

1879. **Dodds**, William John, D.Sc., M.D., C.M.Edin., 19, Marina Road, Prestwick, Ayrshire.

1892. **Donelan**, John O'Conor, L.R.C.P.&S.Irel., M.P.C., Medical Superintendent, Grangegorman Mental Hospital; St. Dymphna's, North Circular Road, Dublin. (*Chairman, Irish Division, since* 1931.) (Lect. on Ment. Dis., Univ. of Dubl.)

1928. **Douglas-Morris**, Ernest Mannering, L.M.S.S.A., Neurologist, Ministry of Pensions Clinic, Nottingham; Tykeford Abbey Nursing Home, Newport Pagnell, Bucks.

1919. **Drake-Brockman**, Henry George, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, St. Luke's Hospital, Middlesbrough.

1916. **Drummond**, William Blackley, M.D., C.M., F.R.C.P.Edin., 10, Hartington Gardens, Edinburgh.

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1921. Drury, Kenneth Kirkpatrick, *M.C.*, B.A., M.D., B.Ch.Dubl., D.P.M., Medical Superintendent, Leicester and Rutland Mental Hospital, Narborough, near Leicester.
1907. Dryden, Arthur Mitchell, M.B., Ch.B.Edin., Medical Superintendent, Glasgow District Mental Hospital, Gartloch, Gartcosh.
1902. Dudgeon, Herbert Wm., M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Director of the Lunacy Department of Public Health, and Director of Abbassia Mental Hospital, Egypt.
1899. Dudley, Francis, L.R.C.P.&S.Irel., c/o Barclay's Bank, Bodmin, Cornwall.
1926. Duncan, Archibald Glen, M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Essex County Mental Hospital, Severalls, Colchester.
1923. Dunne, John, M.B., B.Ch.R.U.I., D.M.D., District Mental Hospital, Sligo.
1922. Dunscombe, Nicholas Dunscombe, M.A., M.B., B.Ch.Camb., L.M.S.S.A., D.P.H., Barrister at-Law, Medical Officer of Health; Town Hall, Bexhill, Sussex.
1932. Dymock, Thomas, M.B., Ch.B.Glasg., Assistant Medical Officer, Edinburgh District Mental Hospital, Bangour, West Lothian.

1906. Eager, Richard, *O.B.E.*, M.D., Ch.B.Aberd., M.P.C., Medical Superintendent, Devon County Mental Hospital, Exminster.
1931. Earl, Charles James Cecil, M.R.C.P.I., D.P.M., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.
1891. Earls, James Henry, M.D., M.Ch.R.U.I., L.S.A., D.P.H., M.P.C., Barrister-at-Law; Fenstanton, Christchurch Road, Streatham Hill, London, S.W. 2.
1921. East, Guy Roland, M.D., B.S., B.Hy.Durh., D.P.H., Medical Superintendent, Northumberland County Mental Hospital, Cottingwood, Morpeth.
1907. East, Wm. Norwood, M.D., M.R.C.S., M.R.C.P.Lond., M.P.C., One of His Majesty's Commissioners of Prisons; Prison Commission, Home Office, Whitehall, Westminster, S.W. 1.
1895. Easterbrook, Charles C., M.A., M.D., F.R.C.P.Edin., M.P.C., *J.P.*, Physician-Superintendent, Crichton Royal Institution, Dumfries.
1931. Eaves, Elizabeth Cowper, M.D., B.S., D.P.M.Lond., Honorary Neuro-pathologist, South Yorkshire Mental Hospital, Wadsley, Sheffield. (Lect. on Physiol., Univ. of Sheffield.)
1924. Eddison, Herbert Wilfred, M.A., M.D.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Wonford House Hospital, Exeter.
1895. Edgerley, Samuel, M.A., M.D., C.M.Edin., M.P.C., Medical Superintendent, West Riding Mental Hospital, Menston, Leeds.
1897. Edwards, Francis Henry, M.D.Brux., M.R.C.P.Lond., "Cherchefelle", Reigate, Surrey.
1924. Edwards, Thomas Lloyd, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., D.P.M., Assistant Medical Officer, Glamorgan County Mental Hospital, Bridgend.
1919. Eggleston, Henry, M.B., B.S.Durh., M.P.C., 11 Bungalow, The Orchards, Kemsing, Kent.
1901. Elgee, Samuel Charles, *O.B.E.*, L.R.C.P.&S.Irel., "Glendaragh", Sea Road, Cooden, Bexhill-on-Sea.
1889. Elkins, Frank Ashby, M.D., C.M.Edin., M.P.C., Hormead, 21, Parkside Drive, Watford, Herts.
1908. Ellison, Arthur, M.R.C.S., L.R.C.P.Lond., 120, Domestic Street, Holbeck, Leeds.
1901. Erskine, Wm. J. Adams, M.D., C.M.Edin., The Orchard, Farnby, near Liverpool.
1925. Esson, Walter Louis, M.A., M.B., Ch.B.Aberd., 21, Oldham Road, Miles Platting, Manchester.
1895. Eurich, Frederick Wilhelm, M.D., C.M.Edin., Lanshawe Cottage, Ilkley, Yorks. (Prof. of For. Med., Univ. of Leeds.)
1909. Eustace, William Neilson, L.R.C.P.&S.Irel., Resident Medical Officer, "Lisrouagh", Glasnevin, Dublin.
1918. Evans, Albert Edward, M.B., B.S.Lond., M.R.C.S., L.R.C.P.Lond., D.P.H., Commissioner, Board of Control, 11, Weymouth Avenue, Mill Hill, N.W. 7.
1927. Ewan, Grey Lamont, *J.P.*, B.Sc., M.B., Ch.M.Sydney, D.P.M., Medical Superintendent, The Mental Hospital, Stockton, nr. Newcastle, New South Wales.
1891. Ewan, John Alfred, M.A.St.And., M.D., C.M.Edin., M.P.C., Greylees, Godalming, Surrey.
1930. Ewen, John Harold, M.R.C.S.Eng., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Surrey County Mental Hospital, Netherne, Coulsdon.
1914. Ewing, Cecil Wilmot, L.R.C.P.&S.Irel., D.P.M., Medical Superintendent, Storthes Hall Mental Hospital, Kirkburton, nr. Huddersfield.

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1929. Fairbairn, William Ronald Dodds, M.A., M.D., Ch.B.Edin., Dipl. Psych., Psychologist, Jordanburn Nerve Hospital; 18, Lansdowne Crescent, Edinburgh. (Lect. on Psych., Univ. of Edin.)

1925. Fairweather, Anne, M.D., B.S.Durh., D.P.M., The Red House, Haydon Bridge, Northumberland.

1908. Fenton, Henry Felix, M.B., Ch.B.Edin., Medical Superintendent, Worcester County and City Mental Hospital, Powick.

1930. Fenwick, Philip Cuthbert Collingwood, L.M.S.S.A., Assistant Medical Officer, East Sussex Mental Hospital, Hellingly.

1928. Finiefs, Leonidas Aristodimos, M.R.C.S., L.R.C.P.Lond., M.D.Paris, Assistant Medical Officer, Three Counties Mental Hospital, Arlesey, Beds.

1889. Finlay, David, M.D., C.M.Glasg., Medical Superintendent, Glamorgan Mental Hospital, Bridgend.

1906. Firth, Arthur Harcus, M.A., M.D., B.Ch.Edin., Deputy Medical Superintendent, Worcester County Mental Hospital, Barnsley Hall, Bromsgrove.

1930. Fisher, John William, M.R.C.S., L.R.C.P., D.P.H., D.P.M., Temporary Assistant Medical Officer, Devon Mental Hospital; Sunny Cottage, Shaldon, near Teignmouth, S. Devon.

1903. Fitzgerald, Alexis, L.R.C.P.&S.Irel., Medical Superintendent, District Mental Hospital, Waterford.

1929. FitzGerald, Edward Joseph, M.B., B.Ch.N.U.I., Assistant Medical Officer, Lancashire County Mental Hospital, Winwick, Warrington.

1908. Fitzgerald, James Francis, L.R.C.P.&S.Irel., Assistant Medical Officer, District Mental Hospital, Clonmel.

1928. Fitzgerald, John, M.B., B.Ch.N.U.I., M.D., D.M.D., Assistant Medical Officer, Grangegorman Mental Hospital, Dublin.

1930. Fitzgerald, John Joseph, M.D.Durh.&Brux., Assistant Physician, Mental Hospital, Cork; Mile House, Cork.

1930. Fitzgerald, Nora May, M.B., B.Ch., B.A.O., Grangegorman Mental Hospital, Dublin.

1921. Fleming, Gerald William Thomas Hunter, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Hereford County and City Mental Hospital, Burghill, Hereford. (*Assistant Editor, 1931–32, and Co-Editor of Journal since 1932.*)

1904. Fleming, Wilfrid Louis Remi, M.R.C.S., L.R.C.P.Lond., *J.P.*, Suffolk House, Pirbright, Surrey.

1932. Flemyng, George Gilbert, M.D.Dubl., (retired), 37c, Maresfield Gardens, London, N.W. 3.

1925. Flind, James, M.B., Ch.B.Glasg., Senior Assistant Medical Officer, Peckham House, London, S.E. 15.

1930. Forbes, Donald John, M.B., Ch.B.St.And., Medical Superintendent, Baldovan Certified Institution, Craigmill House, by Dundee.

1927. Ford-Robertson, William Marsden, M.D., Ch.B.Edin., Director, West of Scotland Neuro-Psychiatric Research Institute; 28, Hamilton Park Avenue, Glasgow, W. 2.

1911. Forrester, Archibald Thomas William, M.D., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Warwick County Mental Hospital, Hatton.

1926. Forrester, Robert Cairns, M.B., Ch.B.Edin., Assistant Medical Officer, City of London Mental Hospital, Stone, Dartford.

1916. Forsyth, Charles Wesley, M.D., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Winson Green Mental Hospital, Birmingham. (Clin. Lect. on Ment. Dis., Univ. of Birm.)

1913. Forward, Ernest Lionel, M.R.C.S., L.R.C.P.Lond., D.C.M.S. Ministry of Pensions, 1, Sanctuary Buildings, London, S.W. 1.

1930. Fox, Edward Arthur Haslam, M.B., Ch.B., D.P.M., Assistant Medical Officer, City Mental Hospital, Fulford, York.

1925. Fox, Francis Elliot, B.A.Camb., M.R.C.S., L.R.C.P.Lond., Medical Officer, Brislington House, Bristol.

1920. Fox, J. Tylor, M.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Lingfield Epileptic Colony; The Homestead, Lingfield, Surrey.

1923. Franklin, Marjorie Ellen, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant, London Clinic for Psycho-Analysis; 3, Bulstrode Street, Welbeck Street, London, W. 1.

1919. Fraser, Kate, B.Sc., M.D., Ch.B.Glasg., D.P.H., Deputy Commissioner, General Board of Control, Scotland; 25, Palmerston Place, Edinburgh.

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1928. Fraser, William, B.Sc., M.B., Ch.B.Glasg., D.P.H., D.P.M., Deputy Medical Superintendent, North Riding Mental Hospital, York.
1921. Fuller, Hugh Hercus Cavendish, M.B., Ch.B.Edin., 136, Inverness Terrace, W. 2.
1902. Fuller, Lawrence Otway, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Three Counties Mental Hospital, Arlesey, Beds.

1928. Gall, Herbert, M.R.C.S., L.R.C.P.Lond., Major *R.A.M.C.*, British Military Hospital, Quetta, India.
1928. Gallagher, Charles Eddie, M.R.C.S., L.R.C.P.Lond., Talfourd House, 28, Mount Pleasant Road, Hastings.
1932. Galloway, James Forbes, M.D.Liverp., D.P.H., Health Department, Town Hall, Chester.
1906. Gane, Edward Palmer Steward, M.D.Durh., M.R.C.S., L.R.C.P.Lond., Castle Green, Llansawel, Llandilo, Carmarthen.
1928. Gardner, Dorothy Margaret, M.B., B.Ch.Belf., D.P.H., Assistant Medical Officer, Belfast Mental Hospital, Purdysburn, Belfast.
1931. Garrod, Marjorie, M.R.C.S., L.R.C.P., Hon. Medical Registrar, The Institute of Medical Psychology; "Bankcroft", Douglas Road, Harpenden, Herts.
1912. Garry, John William, M.B., B.Ch.N.U.I., Assistant Medical Superintendent, District Mental Hospital, Ennis, co. Clare.
1912. Gavin, Lawrence, M.B., Ch.B., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Superintendent, District Asylum, Mullingar.
1896. Geddes, John William, M.B., C.M.Edin., 7, Bedford Row, Worthing.
1930. Gemmell, Daniel Topping, L.R.C.P.&S.I., L.R.T.P.&S.G., D.P.M., Dornhurst, Halstead, Essex.
1919. Gifford, John, B.A.Cape, M.B., Ch.B.Edin., D.P.M., Deputy Medical Superintendent, Lancashire County Mental Hospital, Winwick, Warrington.
1931. Gilchrist, Thomas, L.R.C.P.&S.Edin., L.R.C.P.S.Glasg., Assistant Medical Officer, Park Prewett Mental Hospital, Basingstoke.
1899. Gilfillan, Samuel James, *O.B.E.*, M.A., M.B., C.M.Edin., Medical Superintendent, Bailbrook House, Bath.
1931. Gill, Samuel Ernest, M.D.Lond., D.P.M., Commissioner, Board of Control; 89, Coombe Road, Croydon.
1923. Gillespie, Isabella Annie, M.B., B.Ch.Edin., D.P.M., Senior Assistant Medical Officer, Cheshire County Mental Hospital, Upton, Chester.
1921. Gillespie, Robert Dick, M.D., Ch.B.Glasg., M.R.C.P.Lond., D.P.M., 49, Wimpole Street, W. 1. (Lect. on Psychiat. Med., Guy's Hosp.)
1920. Gillis, Kurt, M.B., Ch.B.Edin., Assistant Physician-Superintendent, Mental Hospital, Bloemfontein, South Africa.
1897. Gilmour, John Rutherford, M.B., C.M., F.R.C.P.Edin., M.P.C., Medical Superintendent, West Riding Mental Hospital, Scalebor Park, Burley-in-Wharfedale, Yorks. (*Secretary, N. and M. Division*, 1920–28, *and Chairman*, 1929–31.)
1906. Gilmour, Richard Withers, M.B., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Physician-in-Charge, Woodside Nerve Hospital, Muswell Hill; 39, Harley Street, London, W. 1. (Lect. on Psychiat., Middx. Hosp.)
1929. Glaister, John Norman, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Northumberland House; Physician, British Hospital for Nervous and Mental Disorders; 2, Devonshire Place, London, W. 1.
1927. Goitein, Percy L., M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, City Mental Hospital, Canterbury.
1923. Golla, Frederick Lucien, M.A., M.B., B.Ch.Oxon., F.R.C.P.Lond., Director of the Laboratory and Pathologist, London County Mental Hospitals, The Maudsley Hospital, Denmark Hill, London, S.E. 5; The Dene, Sunninghill, Berks. (*Chairman, Research and Clinical Committee since* 1931.)
1897. Good, Thomas, Saxty *O.B.E.*, M.A.Oxon., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, County and City Mental Hospital, Littlemore, Oxford. (Lect. on Psychiat., Univ. of Oxford.) (PRESIDENT, 1930–31.)
1889. Goodall, Edwin, *C.B.E.*, M.D., B.S., F.R.C.P.Lond., M.P.C., "Fairlawn", Kingsway, Hove, Sussex. (*Assistant Editor*, 1894–5, *and Co-Editor of Journal*, 1895–98; PRESIDENT, 1923–24.)
1920. Gordon, George, M.B., B.Ch.Glasg., 56, Anne Boleyn's Walk, Cheam, Surrey.
1928. Gordon, Ronald Grey, D.Sc., M.D., F.R.C.P.Edin., 9, The Circus, Bath.
1901. Gostwyck, Cecil Hubert Gostwyck, M.B., Ch.B., F.R.C.P.Edin., Dipl. Psych., M.P.C., Deputy Medical Superintendent, Rampton State Institution, Retford, Notts.

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1923. Gough, Isabel Falconer, M.B., Ch.B., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., D.P.M., Three Corner Park, Calstock, Cornwall.
1928. Grace, Pierce, L.R.C.P.&S.I., Resident Medical Superintendent, District Mental Hospital, Portlaoighise (Maryborough), Leix.
1914. Graham, Norman Bell, *M.C.*, B.A.R.U.I., M.B., B.Ch.Belf., D.P.M., Senior Assistant Medical Officer, Purdysburn Villa Colony, Belfast.
1918. Graham, Samuel John, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Resident Medical Superintendent, Purdysburn Villa Colony, Belfast.
1908. Graham, William Shepherd, M.B., B.Ch.R.U.I., Senior Assistant Medical Officer, Somerset and Bath Mental Hospital, Cotford, near Taunton.
1921. Grant, Alastair Robertson, M.D., Ch.B.Aberd., Medical Superintendent, Lancashire County Mental Hospital, Whittingham, Preston.
1927. Grant, Florence Margaret (*née* Gamble), 306, St. James's Court, Buckingham Gate, S.W. 1.
1925. Grant, John King, M.B., Ch.B.Aberd., Assistant Physician, Royal Asylum, Montrose.
1930. Grant, Penuel Grant, M.B., Ch.B., D.P.H., Assistant Medical Officer, City Mental Hospital, Fishponds, Bristol.
1915. Graves, Thomas Chivers, B.Sc., M.D., B.S.Lond., F.R.C.S.Eng., L.R.C.P.Lond., M.R.C.V.S., Medical Superintendent, Rubery Hill and Hollymoor Mental Hospitals, Northfield, Birmingham.
1916. Gray, Cyril, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Senior Assistant Medical Officer, City Mental Hospital, Gosforth, Newcastle-upon-Tyne.
1928. Gray, James, M.B., Ch.B.Edin., "Jemimaville", Poyntzfield-by-Cononbridge, Ross-shire.
1921. Gray, Joseph Anthony Wenceslaus Pereira, M.D.Brux., M.R.C.S., L.R.C.P.Lond., Visitor of Licensed Houses; 3, Northernhay Place, Exeter.
1909. Greene, Thomas Adrian, L.R.C.P.&S.Irel., *J.P.*, Medical Superintendent, District Mental Hospital, Carlow.
1922. Gregorson, Albert William, M.D., Ch.B., F.R.F.P.S.Glasg., Physician and Deputy Superintendent, North Middlesex Hospital, Edmonton, London, N. 18; 112, Brownlow Road, New Southgate, N. 11.
1927. Grierson, Hugh Arrowsmith, *M.C.*, M.B., B.S.Lond., Medical Officer, H.M. Prison, Brixton, S.W. 2.
1926. Griffiths, Gwenvron Mary, M.D., M.R.C.P.Lond., 50, Wimpole Street, London, W. 1.
1901. Grills, Galbraith Hamilton, M.D., B.Ch.R.U.I., D.M.D., M.P.C., Medical Superintendent, Cheshire County Mental Hospital, Upton, Chester.
1923. Grossman, Simon, M.R.C.S., L.R.C.P.Lond., c/o South Africa House, Strand, W.C. 2.
1922. Guppy, Francis Henry, *M.C.*, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Brighton Mental Hospital, Haywards Heath, Sussex.

1932. Hagedorn, Egmont Oscar, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Assistant Medical Officer, Stirling District Mental Hospital, Larbert.
1894. Halsted, Harold Cecil, M.D.Durh., L.S.A., M.R.C.S., L.R.C.P.Lond., Manor Road, Selsey, Sussex.
1928. Hamilton, John Gerard, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Holloway Sanatorium, Virginia Water, Surrey.
1920. Hancock, Allen Coulter, *M.C.*, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.H., D.P.M., Medical Superintendent, Kent County Mental Hospital, Barming Heath, Maidstone.
1929. Handley, Richard, M.B., Ch.B.Manch., D.P.M., Medical Director, David Lewis Epileptic Colony, Warford, Alderley Edge, Cheshire.
1930. Hannesson, Hannes, B.Sc., M.R.C.S., L.R.C.P.Lond., Authors' Club, Whitehall Court, S.W. 1.
1923. Hardcastle, Douglas Noël, M.R.C.S., L.R.C.P.Lond., D.P.M., Mountgrove, 102, Fitzjohn's Avenue, Hampstead, London, N.W.
1920. Harding, Edward Palmer, L.R.C.P.&S.Irel., Deputy Medical Superintendent, East Riding Mental Hospital, Beverley.
1932. Harkins, William, M.A., M.B., Ch.B.Aberd., Assistant Medical Officer, West Riding Mental Hospital, Storthes Hall, Kirkburton, near Huddersfield.
1920. Harper, Raymond Sydney, M.R.C.S., L.R.C.P.Lond., 36, First Avenue, Hove, Sussex.
1904. Harper-Smith, George Hastie, M.A., M.D.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Brighton Mental Hospital; Galagate, Haywards Heath, Sussex.
1931. Harris, John Borrie, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Assistant Physician, Kingseat Mental Hospital, Newmachar, Aberdeenshire.

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1924. Harris, John Stuart, M.D., Ch.B.Edin., M.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, West Park Mental Hospital, Epsom.

1928. Harris, Noel Gordon, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Springfield Mental Hospital, near Tooting, S.W. 17.

1898. Harris-Liston, Llewellyn, M.D.Brux., L.S.A., M.R.C.S., L.R.C.P.Lond., Fairholm, Cobden Street, Darlington.

1930. Harrison, Geoffrey J., L.R.C.P.&S.I., Assistant Medical Officer, St. Edmondsbury, Lucan, co. Dublin.

1928. Harrowes, William McConnachie, M.D., Ch.B.Glasg., D.P.M., Medical Superintendent, New Saughton Hall, Polton, Midlothian.

1905. Hart, Bernard, M.D., F.R.C.P.Lond., M.R.C.S.Eng., 1, Harcourt House, Cavendish Square, London, W. 1. (Lect. on Ment. Dis., Univ. Coll. Hosp.)

1892. Haslett, William John Handfield, M.R.C.S., L.R.C.P.Lond., M.P.C., *J.P.*, Resident Medical Superintendent, Halliford House, Sunbury-on-Thames.

1930. Haworth, Norah Alice, M.A.Camb., M.R.C.S.Eng., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Severalls Mental Hospital, Colchester.

1923. Hayes, Edmund Duncan Tranchell, B.A., M.D., B.Ch.Dubl., D.P.M., Senior Assistant Medical Officer, County Mental Hospital, Berry Wood, Northampton.

1924. Hayes, Henry Douglas, M.D., Ch.B.Edin., D.P.M., The Mental Hospital, Porirua, Wellington, New Zealand.

1920. Haynes, Horace Guy Lankester, M.R.C.S., L.R.C.P.Lond., Littleton Hall, Brentwood, Essex. (*Secretary, Parliamentary Committee since* 1929.)

1927. Healey, Frederick Henry, B.Sc., M.B., Ch.B.Birm., D.P.M., Deputy Medical Superintendent, Borough Mental Hospital, Rowditch, Derby.

1932. Hemphill, Robert Edward, M.B., B.Ch., B.A.O.Dubl., Assistant Medical Officer, City Mental Hospital, Bristol.

1920. Henderson, Cyril John, M.B.Durh., Assistant Medical Officer, The Royal Albert Institution, Lancaster.

1929. Henderson, David, M.D., Ch.B.Glasg., Assistant Medical Officer and Pathologist, Stafford County Mental Hospital, Cheddleton; The Hollies, Cheddleton, near Leek.

1916. Henderson, David Kennedy, M.D., Ch.B.Edin., F.R.F.P.S.Glasg., Physician Superintendent, Edinburgh Royal Mental Hospital, Morningside; Tipperlinn House, Edinburgh. (Professor of Psychiatry, University of Edinburgh.)

1905. Henderson, George, M.A., M.B., Ch.B.Edin., 25, Commercial Road, Peckham, London, S.E. 15.

1923. Henderson, Norman Keane, B.A., LL.B.Camb., M.B., Ch.B.Edin., D.P.H., D.P.M., Medical Superintendent, Kesteven Mental Hospital, Greylees, Sleaford, Lincs.

1930. Hennelly, Thomas John, M.D., B.Ch., N.U.I., D.P.M., Assistant Medical Officer, Surrey County Mental Hospital, Brookwood, Woking.

1924. Hensman, Henry Saumarez, L.M.&S.Madras, M.R.C.S., L.R.C.P.Lond., M.P.C., Medical Superintendent, Government Mental Hospital, Kilpauk, Madras.

1924. Herbert, James Edward, M.B., B.Ch.R.U.I., Senior Assistant Medical Officer, District Asylum, Omagh.

1925. Heron, John, M.B., Ch.B.Edin., D.P.M., 78, Bonaly Road, Edinburgh.

1929. Hewitt, Edward John Campbell, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer and Pathologist, Napsbury Mental Hospital, St. Albans, Herts.

1912. Higson, William Davies, M.B., Ch.B.Liverp., D.P.H., Medical Officer, H.M. Prison, Liverpool.

1931. Hills, Harold William, M.D., B.S.Lond., M.R.C.P., D.P.M.Camb., Honorary Physician and Anæsthetist, Stroud General Hospital; "Cotsmoor", Rodborough Common, Stroud, Glos.

1932. Hingston, Cicely Lamorna, M.R.C.S., L.R.C.P., *M.B.E.*(Mil.), Hon. Visiting Physician, Lady Chichester Hospital, Hove; 9, The Drive, Hove, Sussex.

1900. Hollander, Bernard, M.D.Freib., M.R.C.S., L.R.C.P.Lond., 57, Wimpole Street, London, W. 1.

1929. Holmes, Eric Gordon, M.A., M.B., B.Ch.Camb., Assistant to the Downing Professor of Medicine, Demonstrator of Pharmacology, Cambridge; Pharmacological Laboratory, Cambridge.

1925. Honan, Bernard Francis, L.R.C.P.&S.Irel., D.P.M., Medical Superintendent, District Mental Hospital, Cork.

1920. Hooper, Reginald Arthur, M.B., B.S.Durh., Medical Superintendent, City Mental Hospital, Fulford, York.

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1929. Hopkins, Edwin Lancelot, M.R.C.S., L.R.C.P.Lond., D.P.H., D.P.M., Medical Superintendent, County Mental Hospital, Mickleover, Derby.
1926. Hopwood, Joseph Stanley, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Officer, State Criminal Lunatic Asylum, Broadmoor.
1926. Horton, Phyllis Mary, M.R.C.S., L.R.C.P.Lond., D.P.M., Wye House, Buxton.
1918. Horton, Wilfred Winnall, M.D., C.M.Edin., Medical Superintendent, Wye House, Buxton.
1926. Hosie, William, M.B., Ch.B.Glasg., 19, Lanfine Road, Paisley, Renfrewshire.
1894. Hotchkis, Robert Dunmore, M.A.Glasg., M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., M.P.C., Medical Superintendent, Renfrew District Mental Hospital, Dykebar, Paisley.
1900. Hughes, Percy T., M.B., C.M.Edin., D.P.H., Medical Superintendent, Worcester County Mental Hospital, Barnesley Hall, Bromsgrove. (Lect. on Ment. Dis., Univ. of Birm.)
1904. Hughes, William Stanley, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Salop County Mental Hospital, Bicton Heath, Shrewsbury.
1932. Hull, Eric Randal, M.B., B.Ch., B.A.O., Assistant Medical Officer, County Mental Hospital, Lancaster.
1931. Hunter, Constance Primrose Helena, L.R.C.P.&S.Edin., D.P.H.Edin., Secretary, Scottish Association for Mental Welfare, 25, Palmerston Place, Edinburgh; St. Catherine's, Linlithgow.
1897. Hunter, David, M.A., M.B., B.Ch.Camb., L.S.A., Medical Superintendent, The Coppice, Nottingham. (*Secretary, S.E. Division*, 1910–1913).
1928. Hunter, James Dewar Hunter, M.B., Ch.B.N.Z., Dipl. Psych., Senior Assistant Medical Officer, Mental Hospital, Seacliffe, Otago, New Zealand.
1904. Hunter, Percy Douglas, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Three Counties Mental Hospital, Arlesey, Beds.
1931. Hutton, Eustace, M.R.C.S., L.R.C.P., Deputy Medical Superintendent, North Wales Counties' Mental Hospital, Denbigh.
1911. Hutton, Isabel Emslie, M.D., Ch.B.Edin., Hon. Physician, British Hospital for Mental and Nervous Disorders; 6, Montagu Place, London, W. 1.
1888. Hyslop, Theo. Bulkeley, M.D., C.M., M.R.C.P., L.R.C.S., F.R.S.Edin., M.P.C., Stretton House, Church Stretton, Salop. (*Chairman, Library Committee*, 1926–27.)

1926. Illingworth, Reginald Ernest, L.R.C.P.&S., L.D.S.Edin., D.Psy.Durh., Deputy Medical Superintendent, Northumberland County Mental Hospital, Cottingwood, Morpeth.
1915. Ingall, Frank Ernest, L.R.C.P.Lond., F.R.C.S.Eng., D.P.H., Public Health Offices, Clarence Street, Southend-on-Sea.
1926. Ironside, Archibald Jennings, M.A., M.B., Ch.B.Aberd., Queenstown Mental Hospital, Cape Province, South Africa.
1932. Irvine, Francis Philip, M.B., Ch.B.Liverp., Assistant Medical Officer, East Sussex Mental Hospital, Hellingly.
1906. Irwin, Peter Joseph, L.R.C.P.&S.Irel., Medical Superintendent, District Mental Hospital, Limerick.

1920. Jackson, John Luke, M.B., B.Ch.Belf., Medical Superintendent, Hants County Mental Hospital, Knowle, Fareham.
1927. Jacob, Frank Harwood, M.D., F.R.C.P.Lond., Hon. Physician, General Hospital; 32, Regent Street, Nottingham.
1927. Jacobson, Jack Nathan, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Tooting Bec Mental Hospital, London, S.W. 17.
1914. James, George William Blomfield, *M.C.*, M.D., B.S.Lond., L.S.A., D.P.M., Physician, Moorcroft House, Hillingdon, Uxbridge; 124, Harley Street, W. 1. (Lect. on Ment. Dis., St. Mary's Hosp.) (*Secretary, Parliamentary Committee*, 1926–29).
1931. Jamieson-Craig, Catherine Isabella Anderson, M.A., M.B., Ch.B.Aberd., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.
1922. Jarrett, Reginald Fitzroy, F.R.F.P.S.Glasg., L.M.S.S.A., Medical Superintendent, Leybourne Grange Colony, West Malling, Kent.
1908. Jeffrey, Geo. Rutherford, M.D., Ch.B.Glasg., F.R.C.P., F.R.S.Edin., M.P.C., Medical Superintendent, Bootham Park, York.
1925. Jenkins, John Alexander, M.B., Ch.B.Glasg., Senior Assistant Medical Officer, Mental Hospital, Larbert.

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1924. Jenkins, Reginald Edward, L.M.S.S.A., Egmont House, Brighton Road, Sutton.
1893. Johnston, Gerald Herbert, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Brooke House, Upper Clapton, London, E. 5.
1928. Johnston, James McLaughlan, M.B., Ch.B.Edin., Medical Officer, H.M. Prison Service 156, Ducane Road, London, W. 12.
1905. Johnston, Thomas Leonard, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., The Gabled House, Leadenham, Lincs.

1927. Kearney, Joseph, M.B., B.Ch.N.U.I., Portrane Mental Hospital, Donabate, Co. Dublin.
1886. Keay, John, *C.B.E.*, M.D., C.M.Glasg., F.R.C.P.Edin., "Champions", Beaminster, Dorset. (PRESIDENT, 1918; *Chairman, Educational Committee*, 1920–27.)
1907. Keene, George Henry, M.D., B.Ch.Dubl., Medical Superintendent, Stewart Institution, Palmerston; 14, Palmerston Park, Dublin.
1909. Keith, William Brooks, *M.C.*, M.D., Ch.B.Aberd., M.P.C., Medical Superintendent, St. Audry's Hospital, Melton; Redwald House, Melton, Suffolk. (*Secretary, Parliamentary Committee*, 1921–26.)
1924. Kelly, Daniel Lane, L.R.C.P.&S.Irel., Inspector of Mental Hospitals, Local Government Department; 52, Grosvenor Road, Rathgar, Dublin.
1930. Kelly, John Vincent, M.B., B.Ch., D.P.M., Assistant Medical Officer, District Mental Hospital, Castlebar, Ireland.
1931. Kennedy, Robert Stewart, M.B., Ch.B., Assistant Medical Officer, Cheshire County Mental Hospital, Chester.
1897. Kerr, Hugh, M.A., M.D., C.M.Glasg., Medical Superintendent, Bucks County Mental Hospital, Stone, Aylesbury.
1902. Kerr, Neil Thomson, M.B., C.M.Edin., *J.P.*, Medical Superintendent, Lanark District Mental Hospital, Hartwood, N.B. (*Chairman, Scot. Div.*, 1930–31.)
1920. Key, Gordon James, M.B., Ch.B.Aberd., Medical Superintendent, Mental Hospital, Grahamstown, C.P., South Africa.
1923. el Kholy, Mohamed Kamel, M.R.C.S., L.R.C.P.Lond., D.P.M., Medico-Legal Department, Bab-el-Khalk, Cairo, Egypt.
1920. Kimber, William Joseph Teil, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Herts County Mental Hospital, Hill End, St. Albans. (*Secretary, Educational Committee*, 1927–30.)
1903. King, Frank Raymond, B.A.Camb., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Peckham House, Peckham, London, S.E. 15.
1902. King-Turner, Arthur Charles, M.B., C.M.Edin., Medical Superintendent, The Retreat, Fairford, Gloucestershire.
1915. Kirwan, Richard R., M.B., B.Ch.R.U.I., Assistant Medical Officer, West Riding Mental Hospital, Menston, Leeds.
1919. Knight, Mary Reid, M.A., M.B., Ch.B.Glasg., Assistant Medical Officer, Paisley Mental Hospital, Riccartsbar.
1932. Krausz, Desider, M.D.Hungary, M.D.Bologna, Assistant Medical Officer, East Sussex Mental Hospital, Hellingly.

1914. Ladell, Robert George Macdonald, M.B., Ch.B.Vict., 395, Coventry Road, Small Heath, Birmingham.
1923. Laing, John Kidd Collier, M.B., B.S.Melb., D.P.M., Medical Superintendent, Darenth Training Colony, Dartford, Kent.
1925. Landers, John Joseph, M.B., B.Ch.N.U.I., D.P.H., Medical Officer, H.M.Prison; 164, Ducane Road, London, W. 12.
1896. Langdon-Down, Reginald L., M.A., M.B., B.Ch.Camb., Normansfield, Hampton Wick, Middlesex.
1919. Langton, Peregrine Stephen Brackenbury, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Royal Earlswood Institution, Redhill, Surrey.
1925. Lascelles, William James, M.B., B.Ch.Belf., D.P.M., Assistant Medical Officer, Claybury Mental Hospital, Woodford Bridge, Essex.
1929. Laws, John Joseph, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Horton Mental Hospital, Epsom.
1915. Leech, Henry Brougham, B.A., M.D., B.Ch.Dubl., Deputy Medical Superintendent, Warwick County Mental Hospital, Hatton. (*Acting Registrar*, 1923–24.)
1909. Leech, John Frederick Wolseley, B.A., M.D., B.Ch.Dubl., D.P.M., Assistant Medical Officer, Wilts County Mental Hospital, Devizes.

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1899. Leeper, Richard R., L.R.C.P., F.R.C.S.Irel., M.P.C., Medical Superintendent, St. Patrick's Hospital, Dublin. (*Secretary, Irish Division*, 1911–29, *and Chairman*, 1929–31; PRESIDENT, 1931–32.)

1906. Leggett, William, B.A., M.D., B.Ch.Dubl., Medical Officer, Smithston Mental Hospital, Greenock.

1927. Levinson, Reuben, M.B., Ch.B.Edin., D.P.H., D.P.M., Assistant Medical Officer, West Ham Mental Hospital, Goodmayes, Essex.

1930. Lewis, Edmund Oliver, M.A.Camb., D.Sc.Lond., M.R.C.S., L.R.C.P.Lond., Commissioner, Board of Control; 34, Cholmeley Crescent, Highgate, N. 6.

1916. Lewis, Edward, F.R.F.P.S.Glasg., L.R.C.P.&S.Edin., Medical Superintendent, Hensol Castle Institution, Pontyclun, Glamorgan.

1924. Lewis, John Biddulph Strafford, M.A.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Banstead Mental Hospital, Sutton, Surrey.

1931. Liddell, John Kenneth Crawford, M.B., Ch.B.Edin., Senior Assistant Medical Officer, Barnwood House, Gloucester.

1920. Lilly, George Austen, *M.C.*, M.A., M.D.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Cane Hill Mental Hospital, Coulsdon, Surrey.

1927. Lindsay, Thomas, M.D., F.R.C.S.Edin., D.P.M., Medical Superintendent, Caterham Mental Hospital; The Pines, Caterham, Surrey.

1908. Littlejohn, Edward Salterne, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Manor Certified Institution, Epsom.

1925. Littlejohn, Mary Victoria, M.B., Ch.B.Aberd., D.P.M., 16, Northgate Street, Warwick.

1921. Livesay, Arthur William Bligh, M.B., C.M., F.R.C.S.Edin., Assistant Medical Officer, St. Andrew's Hospital, Thorpe, Norwich.

1922. Logan, Frederick Colquhoun, M.B., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, County and City Mental Hospital, Gloucester; Lindi, Horton Road, Gloucester.

1932. Logan, William Robert, M.B., Ch.B., Assistant Physician, Royal Mental Hospital, Aberdeen.

1931. Lord, Mrs. Ruby Thornton (*née* Carr), M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer, County and City Mental Hospital, Littlemore, Oxford.

1924. Lornie, Peter, M.D., Ch.B.Edin., Senior Assistant Medical Officer, Monmouth County Mental Hospital, Abergavenny.

1924. Lothian, Douglas B. M., M.B., Ch.B., M.R.C.P.Edin., D.P.M., Deputy Medical Superintendent, Royal Scottish National Institution, Larbert, Stirlingshire.

1929. Love, Gwyneth Duncan, M.B., Ch.B.Edin., Assistant Physician, Bootham Park, York.

1923. Lovell, Clement, M.D., B.S.Lond., Pathologist, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent; Beach Road, Emsworth, Hants.

1931. Lowenfeld, Margaret Frances Jane, M.R.C.S.Eng., L.R.C.P.Lond., Hon. Medical Director, The Children's Clinic for the Treatment and Study of Nervous and Delicate Children; 21, Devonshire Place, London, W. 1.

1906. Lowry, James Arthur, M.D., B.Ch.R.U.I., Medical Superintendent, Surrey County Mental Hospital, Brookwood.

1928. Lowson, William, M.B., Ch.B.St. Andr., Medical Officer, Moat House, Tamworth; 9, Colehill, Tamworth, Staffordshire.

1926. Lucas, Edmund Stanley Sayer, M.R.C.S., L.R.C.P.Lond., *I.M.S.*, c/o Grindlay & Co., Bombay, India.

1929. Luff, Mary Constance, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Physician, The Institute of Medical Psychology; 35, Weymouth Street, London, W. 1.

1930. Lyons, Bernard, M.B., B.Ch., B.A.O.N.U.I., Assistant Medical Officer, District Mental Hospital, Enniscorthy, co. Wexford.

1920. McAlister, William Malcolm, M.A., M.B., Ch.B., F.R.C.P.Edin., Dipl. Psych., Medical Superintendent, Bangour Village, West Lothian. (Lect. on Psychiat., Univ. of Edin.)

1906. Macarthur, John, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, County Mental Hospital, Bracebridge Heath, Lincs.

1931. MacArthur, Mary Elizabeth, M.B., B.Ch.N.U.I., Assistant Medical Officer, The Retreat, York.

1923. Macaulay, Douglas Ian Otto, M.D., Ch.B.Edin., D.P.M., Medical Superintendent, Chiswick House, Pinner, Middlesex.

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1880. MacBryan, Henry Crawford, L.R.C.P.&S.Edin., Medical Superintendent, Kingsdown House, Box, Wilts.

1926. MacCallum, Alexander Grigor, M.B., Ch.B.Glasg., 15, Woodbourne Avenue, Streatham, London, S.W. 16.

1929. Maccallum, Archibald Montgomery, M.B., Ch.B.Glasg., Assistant Medical Officer, Ipswich Mental Hospital, Ipswich.

1929. MacCalman, Douglas Robert, M.B., Ch.B.Glasg., Alderdale, Carr Bridge, Inverness-shire.

1929. McCartan, William, M.D.Belf., D.P.H., D.P.M., Assistant Medical Officer, West Park Mental Hospital, Epsom.

1900. McClintock, John, L.R.C.P.&S.Edin., Resident Medical Superintendent, Grove House, Church Stretton, Salop.

1931. McConnell, Joyce, M.B., B.S.Lond., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom.

1927. McCoull, George, M.B., B.S.Durh., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Officer, Prudhoe Hall Colony for Mental Defectives; Tyne View, Prudhoe-on-Tyne.

1920. McCowan, Peter Knight, M.D., Ch.B.Edin., M.R.C.P.Lond., D.P.M., Barrister-at-Law; Medical Superintendent, Cardiff City Mental Hospital, Whitchurch. (Lect. in Ment. Dis., Welsh National School of Medicine.) (*Secretary, Research and Clinical Committee, since* 1931.)

1932. McCulley, William John, B.Sc., M.B., Ch.B., D.P.M., Assistant Medical Officer, City Mental Hospital, Mapperley Hill, Nottingham.

1921. McCutcheon, Archibald Munn, M.B., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, Monyhull Colony, King's Heath, Birmingham.

1931. McDiarmid, Neil, M.B., Ch.B.Glasg., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

1901. MacDonald, James Hogg, M.B., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, Glasgow District Asylum, Hawkhead, Cardonald, Glasgow. (Lect. on Psychol. Med., Univ. of Glasgow.) (*Chairman, Scottish Division, since* 1932.)

1884. MacDonald, P. W., M.D., C.M.Aberd., *J.P.*, Grasmere, Radipole, Weymouth. (*First Secretary, S.W. Division,* 1894–1905; PRESIDENT, 1907–8.)

1911. MacDonald, Ranald, *O.B.E.*, M.D., Ch.B.Edin., D.P.M., Medical Superintendent, Coton Hill Mental Hospital, Stafford.

1928. Macdonald, Robert William, M.B., Ch.B.Glasg., Medical Officer, Ministry of Pensions, Queen Alexandra Hospital, Cosham, Hampshire.

1905. MacDonald, William Fraser, M.B., Ch.B.Edin., M.P.C., Olive Lodge, Polworth Terrace, Edinburgh.

1931. MacDougall, Donald John, M.B., Ch.B., Major, *R.A.M.C.*, Officer-in-Charge, "D" Block, Royal Victoria Hospital, Netley.

1928. McDougall, John, M.B., Ch.B.Glasg., Senior Assistant Physician, Crichton Royal, Dumfries.

1906. McDowall, Colin Francis Frederick, M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Ticehurst House, Ticehurst, Sussex. (*Secretary, Library Committee, since* 1922.)

1931. McElroy, William Ernest, M.B., Ch.B., B.A.O., Assistant Medical Officer, Park Prewett Mental Hospital, Basingstoke.

1895. Macfarlane, Neil M., *C.B.E.*, M.D., C.M.Aberd., 565, West Street, Durban, Natal, South Africa.

1924. Macfarlane, Robert Melvin, M.B., Ch.B.Edin., D.P.H., D.P.M., Assistant Medical Officer, West Ham Mental Hospital, Goodmayes, Essex.

1923. McGarvey, John, M.B., B.Ch.Belf., D.P.M., Medical Superintendent, Somerset and Bath Mental Hospital, Wells.

1922. McGeorge, Margaret Turner, M.B., Ch.B.Glasg., 35, Glenesk Road, Eltham, S.E. 9.

1928. MacGilp, Finlay Duncan, M.B., Ch.B.St. Andr., Assistant Medical Officer, Durham County Mental Hospital, Winterton, Ferry Hill, co. Durham.

1925. McGlashan, William Reid, M.A., M.B., Ch.B.Aberd., D.P.M.

1925. MacGowan, Agnes Mildred, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer and Pathologist, Bangour Village, Uphall, Linlithgowshire.

1929. McGrath, Annie Margaret, B.C., M.R.C.S., L.R.C.P., Pathologist, Herts County Mental Hospital, Hill End, St. Albans.

1921. McGrath, Mathew Joseph, M.B., B.Ch.R.U.I., D.P.M., Deputy Medical Superintendent, West Riding Mental Hospital; Gortmore, Bar Lane, Stanley, near Wakefield.

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1902. McGregor, John, M.B., Ch.B.Edin., Deputy Medical Superintendent, Glamorgan County Mental Hospital, Bridgend.
1924. McInnes, John, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, City Mental Hospital, Willerby, Hull.
1932. McInnes, Robert Gow, L.R.C.P.&S.Edin., M.R.C.P.Edin., Senior Assistant Physician, Royal Edinburgh Hospital; West House, Morningside, Edinburgh.
1921. McKail, Robert Buchanan Forbes, M.B., Ch.B.Glasg., D.P.M., Deputy Medical Superintendent, Calderstones Certified Institution, Whalley, near Blackburn.
1924. Mackay, George William John, M.B., Ch.B.Edin., D.P.M., Medical Officer, Somerset Mental Deficiency Committee; " Beaford ", Greenway Road, Taunton, Somerset.
1929. MacKay, John, M.B., Ch.B.Glasg., Assistant Medical Officer, Cheadle Royal, Cheadle, Cheshire.
1914. Mackay, Magnus Ross, *M.C.*, M.B., Ch.B.Edin., Medical Superintendent, Newport Borough Mental Hospital, Caerleon, Mon.
1891. Mackenzie, Henry James, M.B., C.M.Edin., M.P.C., 254, Bishopsthorpe Road, York.
1927. Mackenzie, Ivy, M.A., B.Sc., M.D., F.R.F.P.S.Glasg., Consulting Physician, Glasgow District Board of Control; 10, Woodside Terrace, Glasgow, C. 3.
1911. Mackenzie, John Cosserat, M.B., Ch.B.Edin., Assistant Medical Officer, Stafford Mental Hospital, Burntwood, Lichfield.
1926. Mackenzie, John Muir, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Hollymoor Mental Hospital, Northfield, Birmingham.
1927. Mackenzie, Murdo, M.B., B.S., M.R.C.P.Lond., Senior Assistant Physician, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent.
1930. Mackenzie, Myra, M.B., Ch.B.Aberd., Assistant Medical Officer, The Lawn, Lincoln.
1903. Mackenzie, Theodore Charles, M.D., Ch.B., F.R.C.P.Edin., M.P.C., Druim, Inverness.
1921. Mackie, George, *D.S.O.*, M.D., Ch.B.Edin., Thornyhill, Abbey Road, Great Malvern.
1931. McLaughlin, Francis Leo, M.D., B.Ch.N.U.I., Assistant Medical Officer, Colney Hatch Mental Hospital, New Southgate, N. 11.
1927. Macleod, John, M.B., Ch.B.Edin., Assistant Medical Officer, Glasgow District Mental Hospital, Woodilee, Lenzie, N.B.
1921. Macleod, Neil, M.D.Edin., D.P.M., Medical Superintendent, The Retreat, York.
1925. McManus, Hugh Charles, M.B., Ch.B.Vict., D.P.M., The Hall, Wedmore, Somerset.
1930. McMenamin, Francis de Sales, *M.C.*, M.B., Ch.B.Edin., 38, Lower Baggot Street, Dublin.
1931. Macmillan, Donald MacPhail, M.B., Ch.B.Glasg., D.P.M., Medical Superintendent, Great Barr Park Colony, near Birmingham.
1929. Macmillan, Duncan, B.Sc., M.D., M.R.C.P.Edin., D.Psych., Deputy Medical Superintendent, Nottingham City Mental Hospital; Robinwood, Wells Road, Mapperley, Nottingham.
1904. Macnamara, Eric Danvers, M.A., M.D., B.Ch.Camb., F.R.C.P.Lond., 87, Harley Street, London, W. 1.
1925. MacNiven, Angus, M.B., Ch.B.Glasg., M.R.C.P.Edin., D.P.M., Physician Superintendent, Glasgow Royal Mental Hospital; 2, Whittingehame Gardens, Glasgow, W. 2.
1910. MacPhail, Hector Duncan, *O.B.E.*, M.A., M.D., Ch.B.Edin., Medical Superintendent, City Mental Hospital, Gosforth, Newcastle-upon-Tyne. (Lect. on Psychol. Med., Univ. of Durh.)
1922. Macphail, Iain Ross, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Hartwood, Lanarkshire.
1901. McRae, Douglas, M.D., C.M., F.R.C.P.Edin., *J.P.*, Physician-Superintendent, Glengall Hospital; Glengall House, Ayr, N.B. (*Assistant Editor*, 1915–20, *and Co-Editor of Journal since* 1920; *Chairman, Scottish Division*, 1931–32.)
1922. McWilliam, William, M.D., Ch.B., F.R.F.P.S.Glasg., D.P.M., Medical Superintendent, District Asylum, Inverness.
1925. Madgwick, John Reginald Alexander, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom, Surrey.
1923. Madill, Joseph Thomas Herbert, B.A.N.U.I., M.B., B.Ch.Edin., F.R.F.P.S.Glasg., D.P.M., M.P.C., Medical Superintendent, Cumberland and Westmorland Mental Hospital, Carlisle.
1931. Magrath, Donald, M.B., Ch.B.Birm., M.R.C.S., L.R.C.P.Lond., D.P.H., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.
1929. Mahony, Elizabeth Maud, M.B., Ch.B., B.A.O.N.U.I., Assistant Medical Officer, Mental Hospital, Monaghan, Ireland.
1928. Main, Dorothy Mary, M.B., Ch.B.Glasg., Assistant Medical Officer, City Mental Hospital, Willerby, Hull.

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1931. Malloy, Joseph Holder, M.D.St. And., Assistant Medical Officer, Staffordshire County Mental Hospital, Cheddleton.
1908. Mapother, Edward, M.D., B.S.Lond., F.R.C.P.Lond., F.R.C.S.Eng., Medical Superintendent, The Maudsley Hospital, Denmark Hill, London, S.E. 5; 19, Queen Anne Street, London, W. 1. (Lect. in Psych. Med., King's Coll. Hosp.)
1903. Marnan, John, B.A., M.B., B.Ch.Dubl., 144, London Road, Gloucester.
1896. Marr, Hamilton, M.D., C.M., F.R.F.P.S.Glasg., M.P.C., Commissioner, General Board of Control for Scotland; 10, Succoth Avenue, Edinburgh. (*Secretary, Scottish Division*, 1907–10; PRESIDENT, 1927–28.)
1929. Marsh, Rex Godfrey Blake, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Leavesden Mental Hospital; Gabled House, Woodside, near Watford, Herts.
1926. Martin, Alexander Reid, M.B., B.Ch.Belf., D.P.M., Assistant Physician, Sheppard and Pratt Hospital, Townson, Baltimore, Md., U.S.A.
1922. Martin, Frederick Robertson, M.D., Ch.B.Glasg., D.P.M., 6, Grove Road, Sutton, Surrey.
1896. Martin, James Charles, L.R.C.S.&P.Irel., *J.P.*, Medical Superintendent, District Mental Hospital, Letterkenny, Donegal.
1930. Martin, John James Black, M.A., M.D., B.Ch., M.R.C.P., D.P.M., Deputy Medical Superintendent, Dorset County Mental Hospital, Herrison, Dorchester.
1907. Martin, Mary Edith, L.S.A., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., M.P.C., 11, The Drive, Hove, Sussex.
1914. Martin, Samuel Edgar, M.B., Ch.B.Edin., Barrister-at-Law, Medical Superintendent, The Old Manor, Salisbury. (*Secretary, South-Western Division, since* 1930.)
1921. Masefield, William Gordon, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Essex County Mental Hospital, Brentwood. (*Secretary, Educational Committee, since* 1930.)
1911. Mathieson, James Moir, M.B., Ch.B.Aberd., Assistant Medical Officer, South Yorks Mental Hospital, Wadsley, Sheffield.
1932. Maxwell, Robert Warnock, M.R.C.S., L.R.C.P., Assistant Medical Officer, Somerset and Bath Mental Hospital, Wells.
1926. May, George Francis, M.D., C.M.McGill, L.M.S.S.A., Medical Superintendent, Durham County Mental Hospital, Winterton, Ferry Hill.
1932. Menzies, Archibald, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Assistant Medical Officer, Hawkhead Mental Hospital, Glasgow.
1926. Menzies, Duncan, M.A., M.B., Ch.B.Aberd., D.P.M., Deputy Medical Superintendent, Plymouth Mental Hospital, Ivybridge, Devon.
1890. Menzies, William F., B.Sc., M.D., C.M.Edin., F.R.C.P.Lond., Medical Superintendent, Stafford County Mental Hospital, Cheddleton, Leek. (*Vice-Chairman, Parliamentary Committee, since* 1932; PRESIDENT, 1920–21.)
1877. Merson, John, M.A., M.D., C.M.Aberd., Willerby, Brayton Road, Selby.
1932. Methven, James Black, M.B., Ch.B.Edin., Assistant Medical Officer, Fife District Asylum, Cupar.
1910. Middlemiss, James Ernest, F.R.F.P.S.Glasg., M.R.C.S., L.R.C.P.Lond., M.P.C., "The Crest," Scott Hall Road, Chapel-Allerton, Leeds.
1928. Mill, Laura Margaret Dorothea, M.B., Ch.B.Glasg., Public Health Office, 23, Montrose Street, Glasgow.
1929. Miller, Emanuel, M.A.Camb., M.R.C.S., L.R.C.P.Lond., D.P.M., Psychiatrist, East London Child Guidance Clinic; 28, Wimpole Street, London, W. 1.
1930. Miller, Frederick Richard Lanfear, M.R.C.S., L.R.C.P.Lond., D.T.M.&H., 33, Pembridge Villas, London, W. 11.
1925. Miller, Josephine Alcorn Carson, L.R.C.P.&S.Irel., Oxhey Grove, Hatch End, Middlesex.
1924. Miller, Robert Stewart, M.D., Ch.B.Glasg., Director, Khanka Mental Hospital, Cairo, Egypt.
1893. Mills, John, M.B., B.Ch.R.U.I., D.M.D., Medical Superintendent, District Mental Asylum, Ballinasloe, Ireland.
1931. Milmo, Dermod Hubert Francis, M.B., B.Ch.Dubl., D.P.H., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.
1923. Minski, Louis, M.D., B.S.Durh., M.R.C.P.Lond., D.P.M., Assistant Medical Officer, Maudsley Hospital; South Lodge, Champion Hill, London, S.E. 5.
1922. Molony, Charles Bernard, M.B., Ch.B.N.U.I., Assistant Medical Officer, District Mental Hospital, Limerick.

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1910. Monnington, Richard Caldicott, M.D., Ch.B.Edin., D.P.H., D.P.M., Neurologist, Ministry of Pensions; 33, New Street, Salisbury.
1915. Monrad-Krohn, G. H., B.A., M.D., B.S.Oslo, F.R.C.P.Lond., M.R.C.S.Eng., M.P.C., Rikshospitalet, Oslo, Norway. (Prof. of Med., Royal Frederick University, Oslo.)
1931. Moodie, William, M.D., M.R.C.P.Lond., D.P.M., Medical Director, London Child Guidance Clinic, Canonbury, N. 1; 18, New Cavendish Street, London, W. 1.
1925. Moran, Patrick, M.B., B.Ch.N.U.I., D.P.M., Assistant Medical Officer, District Mental Hospital, Mullingar.
1917. Morris, Bedlington Howel, M.B., B.S.Durh., Inspector-General of Hospitals, South Australia; "Tros-y-Parc", Pembroke Street, St. Peter's, Adelaide, South Australia.
1925. Morris, John Vincent, B.A., M.B., B.Ch.Dubl., Assistant Medical Officer, St. Andrew's Hospital, Thorpe, Norwich.
1896. Mould, Gilbert Edward, M.R.C.S., L.R.C.P.Lond., The Grange, Rotherham, Yorks.
1914. Moyes, John Murray, M.B., Ch.B.Edin., D.P.M., Tue Brook Villa, Liverpool, E.
1919. Mules, Annie Shortridge, M.R.C.S., L.R.C.P.Lond., Court Hall, Kenton, Douth Devon.
1907. Mules, Bertha Mary, M.D., B.S.Durh., Court Hall, Kenton, South Devon.
1929. Mullin, Bartholomew Joseph, *M.C.*, L.R.C.P.&S.Irel., D.P.H., D.P.M., Deputy Medical Superintendent, Wonford House Hospital, Exeter.
1929. Munro, Thomas Arthur, M.B., Ch.B., M.R.C.P.Edin., Dipl. Psych., Assistant Physician, Phipp's Psychiatric Clinic, Baltimore, U.S.A.; 20, Merchiston Gardens, Edinburgh.
1925. Murdoch, James Wilson, M.B., Ch.B.Aberd., Senior Assistant Medical Superintendent, Central Mental Hospital, Tanjong Rambutan, Perak, Federated Malay States.
1931. Murray, Helen Sara Euphemia, M.B., Ch.B.Edin., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.
1932. Murray, John Raymund, M.B., B.S.Lond., M.R.C.S., L.R.C.P., Assistant Medical Officer, Claybury Mental Hospital, Woodford Bridge, Essex.
1929. Muthiah, Asainayagam Richard, L.M.S.Singapore, Assistant Physician, Central Mental Hospital, Tanjong Rambutan, Perak, Federated Malay States.

1903. Navarra, Norman, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, City of London Mental Hospital, Stone, Dartford.
1910. Neill, Alex. William, M.D., Ch.B.Edin., Physician-Superintendent, The Warneford Hospital, Oxford.
1920. Nicol, William Drew, M.B., B.S., M.R.C.P.Lond., D.P.M., Medical Superintendent, Horton Mental Hospital, Epsom. (Lect. on Psychiatry, London School of Medicine for Women.)
1923. Nicole, J. Ernest, L.M.S.S.A., D.P.M., Senior Assistant Medical Officer, Lancashire County Mental Hospital, Winwick, Warrington.
1923. Nicoll, James, M.D., C.M.Edin., D.P.H., Medical Superintendent, Fountain Mental Hospital, Tooting Grove, London, S.W. 17.
1920. Nix, Sidney, M.D., B.S.Durh., L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Deputy Medical Superintendent, Graylingwell Mental Hospital, Chichester.
1922. Noble, Ralph Athelstane, M.B., Ch.M.Syd., D.P.M., 10, Edgehill Terrace, New Haven, Connecticut, U.S.A.
1909. Norman, Hubert James, M.B., Ch.B.Edin., D.P.H., Medical Superintendent, Camberwell House Mental Hospital, London, S.E. 5; Northcotes, 79, West Hill, Sydenham, London, S.E. 26. (Lect. on Ment. Dis., Westm. Hosp.)
1923. Noronha, Frank, M.B., C.M.Madras, D.P.M., Superintendent, Mental Hospital, Bangalore City, India.
1932. Norris, Frank Edwin, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, The Coppice, Nottingham.
1926. Northcote, Muriel L. M., M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, City Mental Hospital, Whitchurch, Cardiff.

1930. O'Brien, Eveleen J., M.B., B.Ch., B.A.O.N.U.I., D.P.M., Assistant Medical Officer, Portrane Mental Hospital, Donabate, co. Dublin.
1929. O'Connell, Daniel Joseph, M.B., B.Ch.N.U.I., D.P.M., Assistant Medical Officer, St. Andrew's Hospital, Northampton.
1924. Odlum, Doris Maude, M.A.Oxon., B.A.Lond., M.R.C.S., L.R.C.P.Lond., D.P.M., 42, Harley Street, London, W. 1.
1918. Ogilvie, William Mitchell, M.B., C.M.Aberd., "Monymusk", 2, Riselaw Terrace, Edinburgh.

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1901. Ogilvy, David, B.A., M.D., B.Ch.Dubl., Medical Superintendent, Long Grove Mental Hospital, Epsom.
1911. Oliver, Norman Henry, M.R.C.S., L.R.C.P.Lond., Barrister-at-Law, Medical Superintendent, Ministry of Pensions Hospital; Latchmere, Ham Common, Surrey.
1922. O'Flaherty, Very Rev. Claude, M.B., Ch.B.Edin., The College, Millport, Buteshire.
1920. O'Neill, Arthur, *O.B.E.*, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Napsbury Mental Hospital, St. Albans, Herts.
1924. O'Reilly, James Joseph, M.B., B.Ch.Belf., D.P.M., Deputy Medical Superintendent, City Mental Hospital, Winson Green, Birmingham.
1930. O'Riordan, John Joseph, M.B., Ch.B., D.P.M., Assistant Medical Officer, North Riding Mental Hospital, York.
1902. Orr, David, M.D., C.M.Edin., M.P.C., 24, Grange Road, Edinburgh.
1910. Orr, James Henry Cubitt, M.D., Ch.B.Edin., Medical Superintendent, Midlothian and Peebles Asylum, Rosslyn Castle.
1932. O'Sullivan, Edward N. M., B.A., M.B., B.Ch., B.A.O., D.P.M.N.U.I., Assistant Medical Officer, District Mental Hospital, Killarney.
1916. Overbeck-Wright, Alexander William, M.D., Ch.B.Aberd., D.P.H., M.P.C., Lt.-Col. *I.M.S.*, Superintendent, Asylum House, Agra, U.P., India; c/o Messrs. King, King & Co., Bombay, India.

1928. Paddle, Kenneth Cecil Laurence, *M.C.*, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Caterham Mental Hospital, Caterham, Surrey.
1930. Page, William Robert, B.A., M.B., Ch.M.Sydney, D.P.M.Lond., Hon. Psychiatrist, Sydney Hospital and St. Vincent's Hospital, Sydney; 221, Macquarie Street, Sydney, N.S.W., Australia.
1927. Pal, Sachindra Bhushan, B.A., L.M.S.Calc., Senior Assistant Physician, Central Mental Hospital, Tanjong Rambutan, Federated Malay States.
1927. Parasuram, Govindarajpuram Rampattar, B.A., L.M.S.Madras, M.R.C.P.Edin., Deputy Medical Superintendent, Government Mental Hospital, Madras.
1932. Parfitt, David Neil, M.B., B.S.Lond., B.Sc., D.P.M., M.R.C.S., L.R.C.P., Senior Assistant Medical Officer, Warwick County Mental Hospital, Hatton.
1931. Parker, William Patrick Hugh, L.R.C.P.&S.I., Assistant Medical Superintendent, Mental Hospital, Toowoomba, Queensland, Australia.
1920. Parkin, George Gray, M.D., Ch.B.Vict., Deputy Medical Superintendent, Cheshire County Mental Hospital, Parkside, Macclesfield.
1920. Parnis, Henry William, B.Sc., M.D.Malta, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Bexley Mental Hospital, Bexley, Kent.
1916. Patch, Charles James Lodge, *M.C.*, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Capt. *I.M.S.*, 39, Jail Road, Lahore, India.
1929. Paterson, Arthur Spencer, B.A.Oxon., M.B., Ch.B., M.R.C.P.Edin., Research Fellow, The Maudsley Hospital; 76, Wimpole Street, London, W. 1.
1930. Paton, Thomas, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Brookwood Mental Hospital, Surrey.
1899. Patrick, John, M.B., B.Ch.R.U.I., Medical Superintendent, District Asylum, Omagh.
1928. Patterson, Edward Cecil, M.B., B.Ch.Belf., Assistant Medical Officer, Devon Mental Hospital, Exminster.
1931. Paul, Arthur Blackwell, M.A., M.B., B.Ch.Camb., Consulting Physician, Cheshire County Mental Hospital, Chester; Hon. Physician, Chester Royal Infirmary; 22, Nicholas Street, Chester.
1929. Pearce, John Dalziel Wyndham, M.A., M.B., Ch.B.Edin., Assistant Medical Officer, City Mental Hospital, Leicester.
1920. Pearn, Oscar Phillips Napier, L.S.A., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Cane Hill Mental Hospital, Coulsdon, Surrey.
1931. Pearson, Kate Young, M.B., Ch.B., Assistant Medical Officer, Rampton State Institution, Retford, Notts.
1913. Penny, Robert Augustus Greenwood, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, Devon County Mental Hospital, Exminster.
1927. Perera, Clement Osmund, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Superintendent, Mental Hospital, Angoda, Ceylon.
1928. Perk, David, M.D.Leeds, D.P.M., Assistant Medical Officer, West Riding Mental Hospital, Menston, near Leeds.
1929. Peters, Gordon Frank, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Claybury Mental Hospital, Woodford Bridge, Essex.

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1911. Petrie, Alfred Alexander Webster, M.D., B.S., F.R.C.P.Lond., M.D., F.R.C.S.Edin., D.P.M., Medical Superintendent, Banstead Mental Hospital, Sutton, Surrey. (Lect. on Ment. Dis., Charing Cross Hosp. and West Lond. Post.-Grad. College.) (*Vice Chairman, Research and Clinical Committee, since* 1932.)

1908. Phillips, John George Porter, M.D., B.S., F.R.C.P.Lond., M.P.C., Resident Physician-Superintendent, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent; 19, Cavendish Square, London, W. 1. (Lect. on Ment. Dis., St. Bart.'s Hosp.) (*Secretary, Educational Committee,* 1913–20.)

1906. Phillips, Nathaniel Richard, M.D.Brux., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Monmouth County Mental Hospital, Abergavenny.

1905. Phillips, Norman Routh, M.D.Brux., M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, St. Andrew's Hospital, Northampton.

1921. Phillips, Philip Gordon, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Bryn, The Avenue, Collingham, Leeds.

1924. Pickworth, Frederick Alfred, B.Sc., M.B., B.S., M.R.C.S., L.R.C.P.Lond., A.I.C.(exam.), Ph.C., Director, Joint Board of Research for Mental Diseases, City and University of Birmingham; Hollymoor Mental Hospital, Northfield, Birmingham.

1888. Pietersen, James F. G., M.R.C.S., L.R.C.P.Lond., Ashwood House, Kingswinford, near Dudley, Stafford.

1896. Planck, Charles, M.A.Camb., M.R.C.S., L.R.C.P.Lond., "Pontresina", Perrymount Road, Haywards Heath, Sussex.

1913. Potts, William A., M.A.Camb., M.D.Edin.&Birm., M.R.C.S., L.R.C.P.Lond., Medical Officer, Birmingham Committee for the Care of the Feeble-Minded; 118, Hagley Road, Edgbaston, Birmingham.

1923. Power, Thomas Declan, B.A., M.D., B.Ch.Dubl., M.R.C.P.Lond., D.P.H., D.P.M., Deputy Medical Superintendent, Essex County Mental Hospital, Brentwood.

1921. Poynder, Ernest George Thornton, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Plymouth Mental Hospital, Blackadon, Ivybridge, Devon.

1931. Prentice, David, M.B., Ch.B.Glasg., Assistant Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

1918. Prideaux, Joseph Francis Engledue, M.R.C.S., L.R.C.P.Lond., D.C.M.S.; Ministry of Pensions, 1, Sanctuary Buildings, Great Smith Street, London, S.W. 1.

1928. Quine, Margaret Annette, M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Lancashire County Mental Hospital, Winwick, Warrington.

1930. Rae, James Burnett, M.B., Ch.B.Aberd., Hon. Physician in Charge, Department of Psychological Medicine, Croydon General Hospital; 93, Harley Street, London, W. 1.

1928. Raitt, William John, M.B., Ch.B.Aberd., Dipl. Psych., Assistant Physician, Crichton Royal, Dumfries.

1894. Rambaut, Daniel F., M.A., M.D., B.Ch.Dubl., Medical Superintendent, St. Andrew's Hospital; Priory Cottage, Northampton. (*Registrar since* 1924.)

1889. Raw, Nathan, *C.M.G.*, M.D., B.S., M.R.C.P.Lond., F.R.C.S., F.R.S.Edin., L.S.Sc.Durh., M.P.C., Lord Chancellor's Visitor; 30, Clarendon Court, Maida Vale, London, W. 9. (*Chairman, Parliamentary Committee since* 1926; PRESIDENT, 1929–30.)

1913. Read, Charles Stanford, M.D., M.R.C.S., L.R.C.P.Lond., 62, Queen Anne Street, London, W. 1. (Lect. on Psychol. Med., Bethlem Royal Hospital.)

1920. Read, Walter Woolfe, M.D.Brux., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Berks County Mental Hospital, Moulsford, Wallingford.

1930. Rees, John Rawlings, M.A., M.D.Camb., D.P.H., Deputy Director, The Institute of Medical Psychology; 14, Wimpole Street, London, W. 1.

1927. Rees, Thomas Percy, B.Sc., M.B., B.Ch.Wales, M.R.C.P.Lond., M.R.C.S.Eng., D.P.M., Senior Assistant Medical Officer, Croydon Mental Hospital, Upper Warlingham, Surrey.

1911. Reeve, Ernest Frederick, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Lancashire County Mental Hospital, Rainhill, near Liverpool. (Lect. on Ment. Dis., Univ. of Liverp.)

1931. Reid, Benjamin, M.B., Ch.B.Glasg., D.P.M., Senior Medical Officer, Lancashire County Mental Hospital, Whittingham, Preston.

1911. Reid, Daniel McKinley, M.D., Ch.B., F.R.F.P.S.Glasg., Medical Superintendent, City Mental Hospital, Exeter.

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1910. Reid, William, M.A.St.And., M.B., Ch.B.Edin., Medical Superintendent, Stafford Mental Hospital, Burntwood, Lichfield.

1932. Reid, William Muirhead, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., D.P.H., Assistant Physician, Royal Mental Hospital, Aberdeen.

1923. Retallack-Moloney, Herbert Thomas, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Hanwell Mental Hospital, Southall, Middlesex.

1899. Rice, David, M.D.Brux., M.R.C.S., L.R.C.P.Lond., D.P.H., Medical Superintendent, City Mental Hospital, Hellesdon, Norwich.

1929. Rich, Gilbert J., A.B., A.M., Ph.D.Cornell, M.D.Chicago, D.N.B., Institute for Juvenile Research, 907, South Lincoln Street, Chicago, U.S.A.

1897. Richard, William John, M.A., M.B., C.M., F.R.F.P.S.Glasg., Medical Superintendent, South General Hospital; Merryflats House, Govan, Glasgow.

1922. Riches, Reginald George, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Hanwell Mental Hospital, Southall, Middlesex.

1920. Rickman, John, M.A., M.D., B.Ch.Camb., Physician, London Clinic of Psycho-Analysis; 11, Kent Terrace, London, N.W. 1.

1931. Rivers, William Gregory, M.B., Ch.B.Edin., Medical Superintendent, Cornwall Mental Hospital, Bodmin.

1931. Roachsmith, C. E., Assistant Medical Officer, Napsbury Mental Hospital, St. Albans.

1911. Robarts, Henry Howard, M.D., Ch.B.Edin., D.P.H., Medical Officer, East Lothian Mental Hospital, Ennerdale, Haddington, N.B.

1922. Robb, John Robert Beith, L.R.C.P.&S.Edin., F.R.F.P.S.Glasg., Deputy Medical Superintendent, Glasgow District Mental Hospital, Gartloch, Gartcosh, N.B.

1921. Roberts, Edward Douglas Thomas, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Herts County Mental Hospital, Hill End, St. Albans.

1903. Roberts, Norcliffe, *O.B.E.*, M.D., B.S.Durh., D.P.M., Medical Superintendent, West Park Mental Hospital, Epsom.

1927. Robertson, David, M.D., Ch.B.Glasg., Junior Assistant Physician, Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent.

1908. Robertson, George Dunlop, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Dipl. Psych., Hartwoodhill House, Hartwood, Lanarkshire.

1929. Robertson, James Andrew, M.B., Ch.B.Edin., 144, George Street, Hull.

1920. Robinson, William, M.D., Ch.B.Leeds, D.P.M., Medical Superintendent, City of London Mental Hospital, Stone, Dartford.

1922. Rodger, Kenneth Mann, M.B., Ch.B.Glasg., D.P.M., Deputy Medical Superintendent, Salop County Mental Hospital, Bicton Heath.

1914. Rodger, Murdoch Mann, M.D., Ch.B.Glasg., Dechmont, Helouan, Egypt.

1930. Rodger, Thomas Ferguson, B.Sc., M.B., Ch.B.Glasg., 43, Burnbank Terrace, Glasgow, N.W.

1908. Rodgers, Frederick Millar, *O.B.E.*, M.D., Ch.B.Vict., D.P.H., Medical Superintendent, Lancashire County Mental Hospital, Winwick, Warrington.

1895. Rolleston, Lancelot William, *C.B.E.*, M.B., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Queen Anne's Mansions, St. James's Park, London, S.W. 1.

1922. Rollins, Ernest Edward, B.A., M.B., B.Ch.Dubl., Resident Medical Officer, Brooke House, Upper Clapton, London, E. 5.

1931. Roper, William Francis, M.B., B.S.Lond., M.R.C.S., L.R.C.P., Medical Officer, H.M. Prison, Liverpool; 21, Walton Park, Liverpool.

1888. Ross, Chisholm, M.D.Syd., M.B., C.M.Edin., 225, Macquarie Street, Sydney, New South Wales.

1910. Ross, Donald, M.B., Ch.B., M.R.C.P.Edin., M.P.C., *J.P.*, Medical Superintendent, Argyll and Bute Asylum; Tigh-na-Linne, Lochgilphead, Argyll. (*Vice-Chairman, Educational Committee, since* 1927.)

1923. Ross, Thomas Arthur, M.D., C.M., F.R.C.P.Edin., M.R.C.P.Lond., Medical Director, Cassel Hospital, Swaylands, Penshurst, Kent.

1899. Rotherham, Arthur, M.A., M.B., B.Ch.Camb., Lord Chancellor's Visitor; Elm House, Marshall Road, Farncombe, Surrey.

1922. Roy, John Allen Chisholm, M.B., Ch.B.Vict., Medical Superintendent, Royal Hospital, Cheadle, Cheshire.

1924. Rudolf, Gerald de Montjoie, M.R.C.P.Lond., D.P.H., D.P.M., Medical Superintendent, Brentry Colony; Brentry House, Westbury-on-Trym, Bristol.

1929. Russell, David, M.B., Ch.B.Glasg., 183, Saracen Street, Possilpark, Glasgow, N.

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1923. Russell, John, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, West Riding Mental Hospital, Menston, Leeds.
1912. Russell, John Ivison, M.B., Ch.B., F.R.F.P.S.Glasg., D.P.M., M.P.C., Medical Superintendent, North Riding Mental Hospital, Clifton, York. (*Secretary, N. and M. Division, since* 1929.)
1915. Russell, William, *M.C.*, M.D., Ch.B.Edin., Dip. Psych., D.T.M., Commissioner for Mental Hygiene, Union Buildings, Pretoria, South Africa.
1912. Rutherford, Cecil, B.A., M.B., B.Ch.Dubl., Assistant Medical Officer, Holloway Sanatorium, Virginia Water, Surrey.
1907. Rutherford, Henry Richard Charles, F.R.C.S., L.R.C.P.Irel., D.P.H., Medical Superintendent, Farnham House, Finglas, co. Dublin.
1896. Rutherford, James Mair, M.B., C.M., F.R.C.P.Edin., M.P.C., Brislington House, Bristol.

1902. Sall, Ernest Frederick, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Canterbury.
1908. Samuels, William Frederick, L.M., L.Ch.Dubl., Kearsney Court, near Dover.
1932. Sanders, Marjorie Elizabeth Frances, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom.
1923. Sang, Janet Adeline Agnes, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Long Acre, Station Road, Scholes, Leeds.
1894. Sankey, Edward Hugh Octavius, M.A., M.B., B.Ch.Camb., Resident Medical Licensee, Boreatton Park, Baschurch, Salop.
1932. Schneider, Frank Edwin Ernest, M.D.Lond., M.R.C.S., L.R.C.P., D.P.M., Medical Superintendent, Rampton State Institution for Mental Defectives, Retford, Notts.
1928. Scholberg, Harold Alfred, M.B., M.R.C.S., L.R.C.P.Lond., D.P.H., Pathologist, Cardiff City Mental Hospital; 3, St. Andrew's Crescent, Cardiff.
1926. Scoresby-Jackson, Margaret, M.D., B.S.Durh., c/o Union Bank of Scotland, Ltd., 62, Cornhill, E.C. 3.
1925. Scott, Francis Leonard, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Bracebridge Mental Hospital, Lincoln.
1930. Scott, James, M.B., B.Ch., Assistant Medical Officer, District Mental Hospital, Carlow, Ireland.
1911. Scroope, Gervace Wm. Mavy, M.B., B.Ch.Dubl., Assistant Medical Officer, Central Criminal Asylum, Dundrum, co. Dublin.
1880. Seccombe, George Samuel, M.R.C.S., L.R.C.P.Lond., c/o Lloyds Bank, Threadneedle Street, London, E.C. 3.
1925. Selkirk, Elizabeth Thompson, M.B., Ch.B.Edin., Deputy Medical Superintendent, Hollymoor Mental Hospital, Northfield, Birmingham.
1929. Selling, Lowell Sinn, B.A.Mich., M.A.Columbia, D.N.B., Sc.M.New York, M.D.Bellevue; Institute for Juvenile Research, 907, South Lincoln Street, Chicago, Ill., U.S.A.
1912. Sergeant, John Noel, M.B., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Newlands House, Tooting Bec Common, London, S.W. 17. (*Secretary, South-Eastern Division, since* 1913.)
1925. Shand, George Ernest, M.D., Ch.B.Aberd., D.P.H., 6, Waverley Terrace, St. Saviour's, Jersey.
1930. Sharpe, John Smith, M.B., Ch.B.Glasg., Assistant Medical Officer (Biochemist), County Mental Hospital, Stafford.
1901. Shaw, Benjamin Henry, M.D., B.Ch.R.U.I., Medical Superintendent, County Mental Hospital, Stafford. (*Chairman, N. and M. Division, since* 1932; *Secretary, Research and Clinical Committee*, 1927–31.)
1905. Shaw, Charles John, M.D., Ch.B., M.R.C.P.Edin., *J.P.*, Medical Superintendent, Royal Asylum, Montrose.
1904. Shaw, Patrick, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Medical Superintendent, Hospital for Insane, Ballarat, Victoria, Australia.
1909. Shaw, William Samuel Jagoe, M.D.Belf., M.B., B.Ch.R.U.I., Lt.-Col. *I.M.S.* (ret.), Calcote House, Sandicotes Road, Parkstone, Dorset.
1920. Shearer, Christina Hamilton, M.B., Ch.B.Glasg., Senior Medical Officer, Cassel Hospital, Swaylands, Penshurst, Kent.
1928. Shepherd, Andrew, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Hill End Mental Hospital, St. Albans, Herts.
1923. Shepherd, Charles Ernest Alan, M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Hants County Mental Hospital, Knowle, Fareham.

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1927. Shera, Arthur Geoffrey, M.A., M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Pathologist, Eastbourne Hospitals and East Sussex County Mental Hospital, Hellingly; 10, Upperton Gardens, Eastbourne.
1928. Sheridan, Alfred, L.R.C.P.&S.Irel., Resident Medical Superintendent, Mayo County Mental Hospital, Castlebar, Ireland.
1914. Sherlock, Edward Birchall, B.Sc., M.D.Lond., D.P.H., Barrister-at-Law, " Windleshaw ", Whiteleaf Road, Princes Risborough, Bucks.
1914. Shield, Hubert, *M.C.*, M.B., B.S.Durh., c/o Glyn, Mills & Co., 3, Whitehall Place, S.W. 1.
1929. Shilvock, William Henry, B.Sc., M.B., Ch.B.Birm., Assistant Medical Officer, Rubery Hill Mental Hospital, Birmingham.
1923. Shore, George William, M.D.Lond., D.P.H., D.P.M., Assistant Medical Officer, Springfield Mental Hospital, near Tooting, London, S.W. 17.
1922. Shortt, Jane Elder, M.B., Ch.B.Glasg., Valleyfields, Alingdon, Lanarkshire.
1928. Silverston, Joseph Denzil, M.B., D.S.Durh., Deputy Medical Superintendent, County Mental Hospital, Lancaster.
1928. Sinclair, Arthur Crawford, M.D.Belf., D.P.M., Assistant Medical Officer, Essex County Mental Hospital, Brentwood.
1921. Skene, Leslie Henderson, *M.C.*, M.B., Ch.B.Edin., Dipl. Psych., Medical Superintendent, Mental Hospital, Union Mills, Isle of Man.
1925. Skottowe, James Stewart Ian, M.D.Glasg., D.P.M., Medical Superintendent, Swansea and Merthyr Tydfil Mental Hospital, Sketty, Swansea.
1914. Slaney, Chas. Newnham, M.R.C.S., L.R.C.P.Lond., Medical Officer, H.M. Prison, Wandsworth, S.W. 17; 17, Heathfield Road, Wandsworth Common, London, S.W. 18.
1901. Slater, George Nathan Oscroft, M.D., M.R.C.S., L.R.C.P.Lond., D.P.M., St. Mary's, New Buckenham, Norfolk.
1928. Smith, Arthur Wallace Herbert, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Superintendent, Central Mental Hospital, Tanjong Rambutan, Perak, Federated Malay States.
1910. Smith, Gayton Warwick, M.D.Lond., B.S.Durh., M.R.C.S., L.R.C.P.Lond., D.P.H., Senior Assistant Medical Officer, Springfield Mental Hospital, near Tooting, London, S.W. 17.
1905. Smith, George William, *O.B.E.*, M.B., Ch.B.Edin., Wyke House, Isleworth, Middlesex. (*Treasurer since* 1931.)
1926. Smith, Gordon John, M.B., Ch.B.Aberd., 274, Iffley Road, Oxford.
1923. Smith, Herbert, M.R.C.S., L.R.C.P.Lond., Deputy Medical Superintendent, City Mental Hospital, Fishponds, Bristol.
1899. Smith, John Grimmond, M.D., CM..Edin., " Strathmore ", Bowleaze Cove, Weymouth.
1920. Smith, Maurice Hamblin, M.A.Camb., M.D.Durh., M.R.C.S., L.R.C.P.Lond., Medical Officer, H.M. Prison, Birmingham. (Lect. on Crim., Bethlem Royal Hosp.) (*Co-Editor of Journal since* 1931.)
1931. Smith, Robert Sydney Steele, L.M.S.S.A., Assistant Medical Officer, Caterham Mental Hospital, Caterham, Surrey.
1913. Smith, Thomas Cyril, M.B., Ch.B.Edin., Deputy Medical Superintendent, County Mental Hospital, Barnwood, Gloucester.
1921. Smyth, John Francis, M.D., C.Bh.N.U.I., D.P.M., Inverclyde, Milnsbridge, Huddersfield.
1926. Snell, Harvie Kennard, M.D., B.S., M.R.C.S., L.R.C.P.Lond., D.P.H., Medical Officer, H.M. Prison, Parkhurst; Camp Hill, Newport, Isle of Wight.
1923. Somerville, George, M.D., Ch.B.Edin., D.P.M., Senior Assistant Medical Officer, West Ham Mental Hospital, Goodmayes, Ilford.
1913. Somerville, Henry, B.Sc., M.R.C.S., L.R.C.P.Lond., F.C.S., Harrold, Bedford.
1906. Spark, Percy Charles, M.R.C.S., L.R.C.P.Lond., 3, Clapham Mansions, Nightingale Lane, London, S.W. 4.
1925. Speer, James Millar Craig, M.B., B.Ch.Belf., Assistant Medical Officer, Wilts County Mental Hospital, Devizes.
1929. Spence, David Sheridan, B.A., M.B., B.Ch., B.A.O.Dubl., Assistant Medical Officer, Hereford County Mental Hospital, Burghill.
1922. Spence, Thomas Reginald Carwardine, *M.C.*, M.B., Ch.B.Edin., Dipl. Psych., Assistant Physician, Royal Edinburgh Hospital for Mental Disorders, Morningside; 151, Morningside Drive, Edinburgh.
1901. Starkey, William, M.B., B.Ch.R.U.I., Bryn-y-Neuadd, Llanfairfechan, N. Wales. (*Secretary, South-Western Division*, 1922–30.)

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1928. Statham, Hugh, M.B., B.C.Camb., M.R.C.S., L.R.C.P.Lond., Physician for Nervous Diseases, Royal Victoria and West Hants Hospital; 3, Elgin Road, Bournemouth.
1927. Steel, John P., M.D., Ch.B.Edin., Medical Superintendent, Smithdown Road Hospital, Liverpool.
1925. Steel, Samuel Maxwell, M.B., Ch.B.Glasg., Assistant Medical Superintendent, Monyhull Colony, Kings Heath, Birmingham.
1907. Steele, Patrick, M.D., Ch.B., F.R.C.P.Edin., Medical Superintendent, Roxburgh District Mental Hospital; The Hermitage, Melrose.
1929. Stenhouse, Jack Fingland Martin, M.B., Ch.B.Glasg., D.P.M., Assistant Medical Officer, Banstead Mental Hospital, Sutton, Surrey.
1929. Stephen, Adrian Leslie, B.A., M.B., B.S.Lond., Barrister-at-Law, Physician, London Clinic of Psycho-Analysis; 140, Harley Street, W. 1.
1914. Stephens, Harold Freize, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Birmingham Certified Institution, Coleshill Hall, Coleshill, near Birmingham.
1909. Steward, Sidney John, *D.S.O.*, M.D., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., D.P.H., Dapdune, Guildford, Surrey.
1922. Stewart, Francis Hugh, M.A., D.Sc.St.And., M.D., Ch.B.Edin., D.P.M., Major *I.M.S.* (retired), Giza Memorial Laboratory, Cairo, Egypt.
1927. Stewart, Francis Melville, M.B., Ch.B.Edin., Deputy Medical Superintendent, County and City Mental Hospital, Littlemore, Oxford.
1931. Stewart, Ronald, M.B., Ch.B.Glasg., Deputy Medical Officer of Health for Mental Services, Corporation of Glasgow: 23, Montrose Street, Glasgow.
1887. Stewart, Rothsay Charles, L.S.A., M.R.C.S.Eng., "The Elms", Oak End Waye, Gerrard's Cross, Bucks.
1914. Stewart, Roy MacKenzie, M.D., Ch.B., M.R.C.P.Edin., D.P.M., Medical Superintendent, Leavesden Mental Hospital; Coles Farm, Leavesden, Watford.
1905. Stilwell, Henry Francis, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Hayes Park, Hayes End, Middlesex.
1899. Stilwell, Reginald John, M.R.C.S., L.R.C.P.Lond., Moorcroft House, Hillingdon, Middlesex.
1897. Stoddart, William Henry Butter, M.D., B.S., F.R.C.P.Lond., M.R.C.S.Eng., M.P.C., Harcourt House, Cavendish Square, London, W. 1. (*Secretary, Educational Committee*, 1908–1912.)
1909. Stokes, Frederick Ernest, M.D., Ch.B.Glasg., D.P.H., Senior Assistant Medical Officer, City Mental Hospital, Milton, Portsmouth.
1903. Stratton, Percy Haughton, M.R.C.S., L.R.C.P.Lond., York Lodge, Cliff Cottage Road, Bournemouth.
1928. Strecker, Herbert A. J., M.D., M.S., Priv.-Doz. Ment. Dis. Univ. Würzb.; Hon. Research Appointment to the Joint Board of Research for Mental Diseases, City and University of Birmingham; Hollymoor Mental Hospital, Northfield, Birmingham.
1885. Street, Charles Tidbury, M.R.C.S., L.R.C.P.Lond., Haydock Lodge, Newton-le-Willows, Lancs.
1929. Ström-Olsen, Rolf, M.B., B.Ch.Wales, B.Sc., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Assistant, Cardiff City Mental Hospital, Whitchurch.
1909. Stuart, Frederick Joshua, *O.B.E.*, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Northampton County Mental Hospital, Berry Wood.
1927. Stungo, Ellis, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., 16, Craven Park, Harlesden, London, N.W. 10.
1924. Sturrock, Alexander Corsar, M.A., M.D., C.M.Edin., M.R.C.P.Lond., Preston House, Eccles, Manchester. (Physician, Salford Royal Hospital.)
1900. Sturrock, James Prain, M.A.St.And., M.D., C.M.Edin., Commissioner, General Board of Control for Scotland, 25, Palmerston Place, Edinburgh.
1886. Suffern, Alex. Canning, *O.B.E.*, M.D., M.Ch.R.U.I., Glan-y-Mor, Hill Head, Fareham.
1921. Suffern, Canning, M.A., M.B., B.Ch.Camb., M.R.C.S., L.R.C.P.Lond., Glan-y-Mor, Hill Head, Fareham.
1922. Sullivan, Patrick Daniel, F.R.C.S., L.R.C.P.Irel., Medical Superintendent, Verville Asylum, Clontarf, co. Dublin; 44, Harrington Street, Dublin.
1918. Sutherland, Francis, M.B., Ch.B.Edin., D.P.H., Public Health Department, Dingwall, Ross-shire.
1919. Suttie, Ian D., M.B., Ch.B., F.R.F.P.S.Glasg., 1, Taviton Street, London, W.C. 1.
1928. Sykes, Elizabeth Sarah Marples, M.B., Ch.B.Sheff., Assistant Medical Officer, South Yorks Mental Hospital, Wadsley, Sheffield.

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1928. Sykes, Kathleen Annie Harvey, M.D., B.S.Lond., M.B., Ch.B.Liverp., D.P.M., Assistant Medical Officer, Rubery Hill Mental Hospital, Birmingham.
1908. Swift, Eric W. D., M.B.Lond., Physician-Superintendent, Valkenberg Mental Hospital, Observatory, Cape Town, South Africa.

1926. Talbot, Geoffrey, B.Sc., M.B., Ch.B.Manch., Assistant Medical Officer, Lancashire County Mental Hospital, Prestwich, Manchester.
1923. Tattersall, Stanley Roy, M.R.C.S., L.R.C.P.Lond., Deputy Medical Superintendent, County Mental Hospital, Prestwich, Manchester.
1931. Taylor, Arthur Leslie, M.D.Leeds, Ch.B., Hon. Pathologist, Bristol General Hospital; Visiting Pathologist, Bristol Mental Hospital; 5, Rodney Place, Clifton, Bristol.
1910. Taylor, Arthur Loudoun, B.Sc., M.B., Ch.B., F.R.C.P.Edin., Senior Assistant Medical Officer, Stafford County Mental Hospital, Burntwood, Lichfield.
1924. Taylor, Frederic Cecil Marsh, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer, Kent County Mental Hospital, Chartham Downs.
1897. Taylor, Frederick Ryott Percival, M.D., B.S., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, East Sussex County Mental Hospital, Hellingly. (*Chairman, Educational Committee, since* 1927; *Chairman, South-Eastern Division,* 1930–32.)
1932. Taylor, Richard Hamilton, M.B., B.Ch., B.A.O., D.P.H.N.U.I., Pathologist, Grangegorman Mental Hospital, Dublin; 35, Lower Baggot Street, Dublin.
1925. Taylor, Robert, L.R.C.P.&S.Irel., Assistant Medical Officer, St. Patrick's Hospital, Dublin.
1926. Tennent, Thomas, M.B., Ch.B.Glasg., D.P.H., D.P.M., Deputy Medical Superintendent, Maudsley Hospital, Denmark Hill, London, S.E. 5.
1921. Thomas, Cyril James, M.R.C.S., L.R.C.P.Lond., D.P.M., Deputy Medical Superintendent, Lancashire County Mental Hospital, Whittingham, near Preston.
1920. Thomas, Frederic Percival Selwyn, M.D., Ch.B.Vict., The Oaks, Porthill, Staffordshire.
1908. Thomas, Joseph David, B.A., M.B., B.C.Camb., "Dan-y-Graig", Cheyne Road, Stoke Bishop, Bristol.
1911. Thomas, William Rees, M.D., B.S., M.R.C.S., M.R.C.P.Lond., D.P.M., M.P.C., Senior Commissioner, Board of Control; 34, Chartfield Avenue, Putney Hill, London, S.W. 15.
1925. Thompson, Robert, M.B., B.Ch.Belf., D.P.M., Senior Assistant Medical Officer, St. Patrick's Hospital, Dublin. (*Secretary, Irish Division, since* 1929.)
1921. Thomson, Aidan Gordon Wemyss, M.B., Ch.B.Glasg., D.Psych., Assistant Physician, Glasgow Royal Mental Hospital, Gartnavel.
1920. Thomson, William George, M.A., M.B., Ch.B.Aberd., D.P.H., D.P.M., Deputy Medical Superintendent, Royal Hospital, Cheadle, Cheshire.
1927. Thorpe, Frederick Thomas, M.R.C.S., L.R.C.P.Lond., D.P.M., Assistant Medical Officer and Pathologist, South Yorkshire Mental Hospital, Wadsley, Sheffield.
1914. Tisdall, Charles Jerome, M.B., Ch.B.Edin., Medical Superintendent, Boughton Hall, Chester.
1903. Topham, J. Arthur, B.A.Camb., M.R.C.S., L.R.C.P.Lond., 7, Montacue Court, Westbourne Gardens, Folkestone.
1896. Townsend, Arthur Allen Deykin, M.D., B.Ch.Birm., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Barnwood House, Gloucester.
1903. Tredgold, Alfred Frank, M.D.Durh., F.R.C.P.Lond., F.R.S.Edin., "St. Martin's," Guildford. (Lect. on Ment. Deficiency, London Univ.)
1908. Tuach-Mackenzie, William, M.D., Ch.B.Aberd., Physician-Superintendent, Royal and District Asylums, Dundee; Westgreen, Dundee. (Lect. on Ment. Dis., Univ. of St. Andrews.)
1906. Turnbull, Peter Mortimer, *M.C.*, M.B., B.Ch.Aberd., D.P.M., Medical Superintendent, Tooting Bec Mental Hospital, London, S.W. 17.
1909. Turnbull, Robert Cyril, M.D., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Essex County Mental Hospital, Severalls, Colchester.
1906. Turner, Frank Douglas, M.B., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Royal Eastern Counties Institution, Colchester. (PRESIDENT-ELECT, 1933–34.)
1922. Twomey, John Christopher, M.B., Ch.B.Liverp., D.P.H., Senior Assistant Physician, The Mental Hospital, Queenstown, Cape Province, South Africa; c/o Secretary for Interior, Pretoria.
1930. Tyars, Mary Elizabeth, B.Sc., M.B., B.S.Lond., D.P.M., Assistant Medical Officer, Horton Mental Hospital, Epsom, Surrey.

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1929. Umney, William Francis, M.D., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, The Flower House, Catford, S.E. 6; 9, The Knoll, Beckenham, Kent.

1931. Valentine, James, M.B., Ch.B.Glasg., Assistant Physician, Glasgow Royal Mental Hospital; 1055, Great Western Road, Glasgow.

1922. Viehoff, Herman Crowther, M.R.C.S., L.R.C.P.Lond., 48, Moor Lane, Great Crosby, Lancs.

1894. Vincent, William James N., *C.B.E.*, M.D., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, South Yorkshire Mental Hospital, Wadsley, Sheffield. (Lect. on Ment. Dis., Univ. of Sheff.)

1923. Wadsworth, George Reginald, M.B., B.Ch.Belf., D.P.M., Assistant Medical Officer, Lancashire County Mental Hospital, Lancaster.

1928. Waldo, Henry Cecil, M.R.C.S., L.R.C.P.Lond., Barrister-at-Law, Medical Superintendent, Notts County Mental Hospital, Radcliffe-on-Trent, Notts.

1926. Walk, Alexander, M.D., B.S.Lond., D.P.M., Assistant Medical Officer, Cane Hill Mental Hospital, Coulsdon (*Assistant Editor*, 1928–31, *and Co-Editor of Journal since* 1931.)

1914. Walker, Robert Clive, M.D., Ch.B.Edin., Deputy Medical Superintendent, West Riding Mental Hospital, Menston, Leeds.

1908. Wallace, John Andrew Leslie, M.D., Ch.B.Edin., M.P.C., *J.P.*, Mental Hospital, Callan Park, Sydney, New South Wales.

1931. Wallace, May Isabel, M.D., Ch.B.Birm., D.P.M., Assistant Medical Officer, Hanwell Mental Hospital, Southall, Middlesex.

1912. Wallace, Vivian, L.R.C.P.&S.Irel., D.P.H., Ballinakill, Multyfarnham, co. Westmeath.

1932. Walsh, Fergus O'Connell, L.R.C.P.&S.Irel., Assistant Medical Officer, Portlaoighise (Maryborough) District Mental Hospital, Portlaoighise, co. Leix, Ireland.

1928. Walsh, Michael Anthony, L.R.C.P.&S.I., D.P.M., Assistant Medical Officer, Claybury Mental Hospital, Woodford Bridge, Essex.

1889. Warnock, John, *C.M.G.*, B.Sc., M.D., C.M.Edin., M.R.C.S.Eng., The Limes, 181, London Road, Twickenham.

1927. Waterhouse, Amyas Theodore, M.A., M.D., B.Ch.Oxon., M.R.C.S., L.R.C.P.Lond., Hon. Physician, Neurological Department, Radcliffe Infirmary; 35, Beaumont Street, Oxford.

1895. Waterston, Jane Elizabeth, M.D.Brux., F.R.C.P.Irel., L.R.C.S.Edin., M.P.C., Govt. Official Visitor, Valkenberg Mental Hospital, Cape Town; 85, Parliament Street, Cape Town, South Africa.

1922. Watson, Douglas Chalmers, M.D., F.R.C.P.Edin., Physician, Royal Infirmary; 28, Melville Street, Edinburgh.

1908. Watson, Hugh Ferguson, M.D., Ch.B.Glasg., Ph.D.Edin., L.R.C.P.&S.Edin., F.R.F.P.S. Glasg., D.P.H., F.R.S.Edin., Deputy Commissioner, General Board of Control for Scotland; 25, Palmerston Place, Edinburgh.

1924. Watson, John, *M.C.*, M.B., B.Ch.Edin., Resident Medical Superintendent, District Asylum, Londonderry.

1911. Webber, Leonard Mortis, M.R.C.S., L.R.C.P.Lond., Senior Assistant Medical Officer, Surrey County Mental Hospital, Netherne, Coulsdon.

1929. Weber, Hilda Marion, B.Sc., M.D.Lond., Physician, The Institute of Medical Psychology; 23, New Cavendish Street, London, W. 1.

1922. Webster, William Leckie, M.B., Ch.B.Edin., M.P.C., Major *R.A.M.C.*, Specialist in Mental Diseases, Northern Command, British Military Hospital, Rawalpindi, India.

1932. Weir, Thomas William Harold, M.B., B.Ch., B.A.O.Belf., Assistant Medical Officer, County Mental Hospital, Armagh.

1919. Westrup, Joseph Perceval, M.R.C.S., L.R.C.P.Lond., c/o Lloyds Bank, Ltd., Salisbury.

1911. White, Edward Barton Cartwright, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, City Mental Hospital, Fishponds, Bristol. (Lect. on Ment. Dis., Univ. of Brist.) (*Chairman, S.W. Division, since* 1930.)

1884. White, Ernest William, *C.B.E.*, M.B., M.R.C.P., "Fenstanton", Christchurch Road, S.W. 2; and Betley House, near Shrewsbury. (Emeritus Prof. Psychol. Med., King's Coll., Lond.) (*First Secretary, S.E. Division*, 1897–1900; *Chairman, Parliamentary Committee*, 1904–7; PRESIDENT, 1903–4.

1921. Whitelaw, William, M.B., B.Ch.Glasg., Oaklands, Shirley Green, Acocks Green, Birmingham.

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1889. Whitwell, James Richard, M.B., C.M.Edin., 66, York Mansions, Battersea Park, S.W. 11. (*Acting Hon. Librarian and Chairman, Library Committee, since* 1927 ; *Hon. Librarian since* 1928.)
1913. Wilkins, William Douglas, M.B., Ch.B.Vict., M.R.C.S., L.R.C.P.Lond., D.P.M., Senior Assistant Medical Officer, Stafford County Mental Hospital, Cheddleton, Leek.
1900. Wilkinson, Harry Bacon, M.R.C.S., L.R.C.P.Lond., " Dalestorth ", Lynton Drive, Hillside, Southport, Lancs.
1929. Will, George Wishart, M.B., Ch.B.N.Z., M.P.C., Major *R.A.M.C.*, British Military Hospital, Deolali, Bombay Presidency, India.
1925. Williams, Edward Lincoln, M.R.C.S., L.R.C.P.Lond, The Hall, Harrow Weald, Middlesex.
1922. Williamson, David Hardie, M.B., Ch.B.Edin., Assistant Medical Officer, Glasgow District Mental Hospital, Woodilee, Lenzie, N.B.
1923. Wilson, Alban, M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Coldeast Colony, Sarisbury, Southampton.
1927. Wilson, Charles Herbert, M.B., B.Ch.Dubl., 52, Fitzwilliam Square, Dublin.
1928. Wilson, Edward Alexander, M.D., Ch.B.Edin., Port Darwin, Falkland Islands.
1925. Wilson, Harriette Appleby, M.B., Ch.B.Leeds, D.P.M., Senior Assistant Medical Officer, West Riding Mental Hospital, Wakefield.
1930. Wilson, Henry Leonard, M.B., B.Ch.Camb., M.R.C.P., D.P.M., Physician, The Institute of Medical Psychology ; 142, Harley Street, London, W. 1.
1923. Wilson, Isabel Grace Hood, M.D., Ch.B.Edin., D.P.M., Commissioner, Board of Control ; 154, Clarence Gate Gardens, London, N.W. 1.
1920. Wilson, James Leitch, M.B., Ch.B.Edin., D.P.M., 10, New Cavendish Street, London, W. 1.
1899. Wolseley-Lewis, Herbert, M.D.Brux., F.R.C.S., L.R.C.P.Lond., " Dormers ", Wimborne, Dorset. (*Secretary, Parliamentary Committee*, 1907–12; *Chairman*, 1912–21.)
1921. Wood, Bertram William Francis, M.B., B.S.Leeds, West African Medical Staff ; c/o P.O., Lagos, South Province, Nigeria.
1929. Woodcock, Oswald Hampson, M.D.Manch., 22, Ridge Hill, Golder's Green, N.W. 11.
1912. Woods, James Cowan, B.A.R.U.I., M.D., B.S., M.R.C.S., L.R.C.P.Lond., 40, Harley Street, London, W. 1. (Lect. on Ment. Dis., St. George's and London Hosps.)
1885. Woods, John Francis, M.D.Durh., L.S.A., M.R.C.S.Eng., 7, Harley Street, London, W. 1.
1912. Wootton, John Charles, *M.C.*, M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Haydock Lodge, Newton-le-Willows, Lancs.
1922. Wootton, Leonard Henry, *M.C.*, B.Sc., M.B., B.S., M.R.C.S., L.R.C.P.Lond., D.P.M., Medical Superintendent, Ewell Mental Hospital, Epsom.
1900. Worth, Reginald, *O.B.E.*, M.B., B.S.Durh., M.R.C.S., L.R.C.P.Lond., Medical Superintendent, Springfield Mental Hospital, near Tooting, London, S.W. 17. (Lect. on Ment. Dis., Westm. Hosp.) (*Hon. General Secretary since* 1919.)
1917. Wright, Maurice Beresford, *O.B.E.*, M.D., C.M.Edin., Physician, The Institute of Medical Psychology ; 86, Brook Street, London, W. 1.
1929. Wyllie, Andrew McNae, B.Sc., M.B., Ch.B., Clinical Pathologist, Crichton Royal Institution, Dumfries.

1928. Yates, Arthur Gurney, M.A., M.D.Edin., F.R.C.P.Lond., Physician, Sheffield Royal Infirmary ; 53, Wilkinson Street, Sheffield.
1921. Yellowlees, David, M.B., Ch.B.Glasg., 5, Ruskin Terrace, Glasgow, W. 2.
1914. Yellowlees, Henry, *O.B.E.*, M.D., Ch.B., F.R.C.P.Edin., F.R.F.P.S.Glasg., M.R.C.P. Lond., D.P.M., 93A, Harley Street, London, W. 1. (Lect. on Psych. Med., St. Thomas's Hospital, London.)
1926. Young, Hubert Turner Penn, M.B., Ch.B.Edin., Medical Officer, H.M. Prison ; 168, Ducane Road, London, W. 12.

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Honorary Members	37
Corresponding Members	45
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1927. Robertson, George Matthew, M.D., C.M., F.R.C.P.Edin., Hon. F.R.C.S.Edin., M.P.C., Professor of Psychiatry, University of Edinburgh; Tipperlinn House, Morningside Place, Edinburgh. (*Ord. Mem.*, 1887; PRESIDENT, 1922–23; *Vice-Chairman, Research and Clinical Committee, since* 1927.)

Corresponding Member.

1922. Kure, Prof. Schuzo, Tokyo University, Japan.

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1892. Beadles, Cecil F., M.R.C.S., L.R.C.P.Lond., Gresham House, Egham Hill, Egham, Surrey.

1918. Blandford, Walter Folliott, B.A.Camb., M.R.C.S., L.R.C.P.Lond., 35, Gunterstone Road, W. 14.

1923. Gibson, George Herbert Rae, *D.S.O.*, M.D., F.R.C.P.Edin., L.C.P.S.Brit. Columbia, Dipl. Psych.; Deputy Commissioner, General Board of Control, Scotland; 23, Cluny Terrace, Edinburgh.

1912. Hunter, George Yeates Cobb, M.R.C.S., L.R.C.P.Lond., M.P.C., *I.M.S.* (Ret.), c/o Messrs. Grindlay & Co., 54, Parliament Street, London, S.W. 1.

1905. McDougall, Alan, M.D., Ch.B.Vict., M.R.C.S., L.R.C.P.Lond., Medical Director, The David Lewis Colony, Warford, Alderley Edge, Cheshire.

1903. Nelis, William F., M.D.Durh., L.R.C.P.Edin., L.R.F.P.S.Glasg., The Chalet, New Road, Teignmouth.

1869. Nicolson, David, *C.B.*, LL.D., M.D., C.M.Aberd., M.R.C.P.Edin., Hanley, Park Road, Camberley, Surrey. (PRESIDENT, 1895–6.)

1891. Pierce, Bedford, M.D., F.R.C.P.Lond., "Bankcroft", Douglas Road, Harpenden, Herts. (*Secretary, N. and M. Division*, 1900–8; PRESIDENT, 1919–20.)

1889. Pope, George Stevens, L.R.C.P.&S.Edin., L.R.F.P.S.Glasg., Park House, Eaton Road, Norwich.

1891. Skeen, James Humphry, M.B., C.M.Aberd., M.P.C., Medical Superintendent, New Saughton Hall, Polton, Midlothian.

1899. Smyth, Walter Samuel, M.B., B.Ch.R.U.I., Assistant Medical Superintendent, District Asylum, Antrim.

1885. Soutar, James Greig, M.B., C.M.Edin., M.P.C., 20, Royal Parade, Cheltenham, (PRESIDENT, 1912–13; *Chairman, South-Western Division*, 1929–31.)

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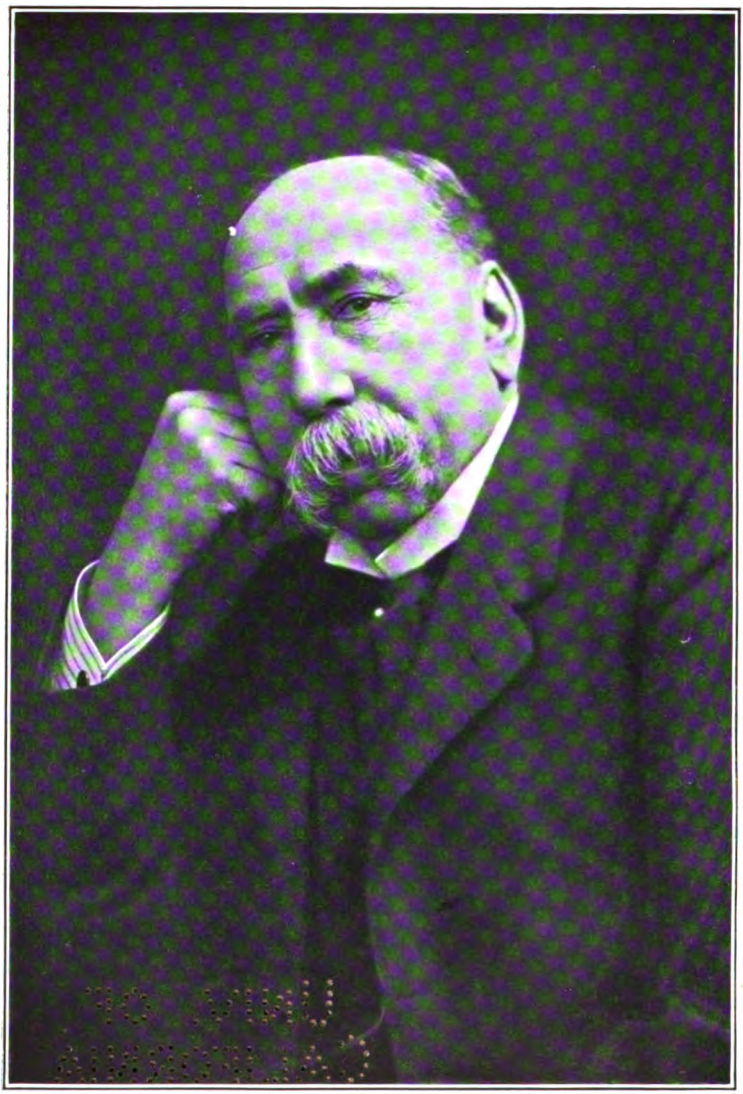

DAVID NICOLSON, *C.B.*, LL.D., M.D., M.R.C.P.E.

Born 1844.
Died 1932.

Ordinary Member, 1869.
President 1895-6.

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THE

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DAVID NICOLSON, *C.B.*, LL.D., M.D., C.M.ABERD., M.R.C.P.E.

Dr. DAVID NICOLSON was of a family that came originally from the Isle of Skye, but had been, for four generations, established in the redoubtable county of Aberdeen. He was born on December 25, 1844, at Cruden Brig, now a sanctuary of the game he loved so well, and within a few miles of Longside, formerly the home of the Rev. John Skinner of Tullochgoram fame, whose genial disposition and desire to diffuse feelings of kindliness and good humour among his fellow men he undoubtedly shared. Of his home life he has left no record, but he always referred to it as a happy, bracing time, and free from the Presbyterian rigidity which surrounded it, for his family were Scottish Episcopalians. His elder brother became a Scottish Episcopalian clergyman and Dean of Brechin Cathedral, and his death in the prime of life, after an operation, cast a long shadow on Nicolson's career.

Educated at the Aberdeen Grammar School, the intellectual nursery of many distinguished men, Nicolson, as was the system in Scotland then, passed into the University in 1860 when he was only sixteen years old. During his curriculum there in arts and medicine he gained honours in several classes, and in all of them his good nature made him exceedingly popular. He used to tell that in one class, in which a prize for exemplary conduct during the session was awarded by the vote of the students, he was unanimously elected amongst uproarious applause, although in the exuberance of youth he had been guilty of quite an exceptional number of breaches of discipline. Graduating M.B. and C.M. in 1866 with honours, he set to work at once as House Surgeon in the Dundee Infirmary, relieving Dr. J. T. Maclaggan, then at work on the salicylates. He suffered, as was not uncommon among House Surgeons in Scottish hospitals in those days, from an attack of typhus fever. After his convalescence, an immediate income being desirable, he entered the Convict Prison Service, declining the offer of an appointment as Assistant Medical Officer in the Perth District Asylum, at Murthly, of which that eminent

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naturalist, Dr., afterwards Prof. Carmichael McIntosh, F.R.S., was then Medical Superintendent. In the Convict Prison Service Nicolson held office in Portland, Woking and Millbank Prisons successively from 1867 to 1873, when he was put in chief charge of Portsmouth Prison, and there he remained until 1876, when he was appointed Deputy Medical Superintendent of Broadmoor Criminal Asylum, then under the able and humane headship of Dr. William Orange. Here he became acquainted with other phases of aberrant mind than had confronted him in prisons, and was specially equipped for the responsible and indeed hazardous duties which devolved on him when he succeeded Dr. Orange as Medical Superintendent in 1886.

At Broadmoor he proved himself an able administrator and secured the confidence of the Home Office and of his staff, while he did what was possible to ameliorate the condition of "the strangely visited people" under his charge. He was largely instrumental in carrying out a change suggested by Dr. Orange—the separation of two classes of inmates, the one composed of persons whose offences had been isolated criminal acts, the direct result of their insane state, and who up to the time of the outbreak of their insanity had in many cases led honest and industrious lives, the other composed of those removed from convict prisons while undergoing penal servitude, and whose offences against law and order had been part of their everyday lives. The result of the separation of these two classes, when ultimately effected, was increased tranquillity in the wards, and comparative freedom from acts of insubordination and disorder.

During his sojourn at Broadmoor, Nicolson made a careful study of the various factors that have to be taken into account in estimating the mental state of insane criminals, and from time to time published useful monographs on the relations of criminal insanity to mental defect, alcoholic excess and epilepsy. He was always more practical than scientific or philosophical in his attitude; he never attempted any subtle mental analysis, and had no sympathy with Lombroso or his school. He took a common-sense view of the problems submitted to him, and thus commended himself to the authorities in the many doubtful cases in which the defence of insanity had been set up and about which he was consulted.

While at Broadmoor, Nicolson served with acceptance on several committees, such as the Home Office Departmental Committee on Habitual Drunkards and the Irish Government Committee of Inquiry into Dundrum Criminal Lunatic Asylum.

In 1895 Nicolson received what he regarded as the highest compliment paid to him in his professional career, in his election as President of the Medico-Psychological—now the Royal Medico-Psychological Association. He delivered an able and lucid Presidential Address on "Crime, Criminals and Criminal Lunatics," in which, while deriding criminal anthropology, he made an important

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contribution to it in a statistical review and classification of the crimes and sentences of patients admitted to Broadmoor during a long series of years.

In 1896 Nicolson was appointed by the Lord Chancellor, Lord Halsbury, one of his Visitors in Lunacy on the resignation of Dr. Lockhart Robertson. His colleagues on the Board feared at first that his special experience in dealing with criminals might have made him a little suspicious and peremptory, but they speedily found that there was no ground for such apprehension. He performed his duties with the utmost tact and consideration, while his reports were models of clearness and succinctness. Behind a somewhat rugged exterior and blunt manner he had genuine sympathy and kindness of heart, and established friendly relations with his patients, many of whom expressed deep regret when failing health necessitated his retirement from office in 1921.

Outside his professional and official work Nicolson had many interests and pursuits. He was a keen cricketer, a member of the M.C.C., and a frequent spectator of matches at Lords and the Oval. At golf and at lawn tennis he played a vigorous game up till his seventy-second year, and took a hand at whist and bridge frequently at the Garrick and Baldwin Clubs. He was a collector of china and antiques and a connoisseur of old prints.

Nicolson was an Honorary Member of the Medico-Psychological Societies of Paris and Belgium, and in 1921 had conferred on him the LL.D. degree of the University of Aberdeen. He married in 1886 Edith Margaret, daughter of William Casè, of Fareham, Hants, who predeceased him, and he leaves three daughters, who have been his devoted companions in his declining years.

JAMES CRICHTON-BROWNE.

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Part I.—Original Articles.

THE THIRTEENTH MAUDSLEY LECTURE: EDUCATION IN MEDICINE.

By Sir E. FARQUHAR BUZZARD, Bt., M.A., M.D., F.R.C.P., *K.C.V.O.*,
Regius Professor of Medicine in the University of Oxford.

Delivered before the Royal Medico-Psychological Association on November 22, 1932.

WHEN I accepted the great honour of giving the Maudsley Lecture this year, I was instructed that my subject should be one of popular interest. The theme of "Education in Medicine" was chosen with some trepidation, not so much on account of any lack it might have of intrinsic interest, but because its elaboration might lead me to express views not entirely in harmony with popular opinion. "Education in medicine" rather than "medical education", because I had it in mind to discuss the kind of instruction which, if within his reach, would enable the layman to recognize and appreciate some of the principles on which the practice of medicine is based and pursued. And my choice was determined by the conviction, which must be generally shared, that the practice of medicine is much handicapped by a want of understanding, and therefore of sympathy and co-operation, on the part of the public—a want of understanding, the causes of which might be explored with advantage to both parties concerned in it.

The problem of educating the layman in matters of health and disease to an extent which would create closer co-operation between doctor and patient is one which has attracted considerable attention in recent years, but the difficulties of which demand more careful exposure than they have yet received. The problem, indeed, is not only bristling with difficulties and possibly fraught with dangers, but cannot be tackled with success unless a number of subsidiary questions are previously investigated, the first of which may be put in the following way:

"What is the nature and extent of the average layman's ignorance of the science and art of medicine (using that term in its widest sense), and on what factors does it depend?"

May I preface my answer to this question by two explanatory statements? In the first place I shall use the term "layman" to describe the man in the street, the man or woman who has had little or no scientific education, and

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whose vocation or experiences have not brought him or her into intimate association with the profession of medicine. In the second place I shall use the word "ignorance" or "ignorant", in its strict sense, without any offensive or critical implications.

With these definitions in mind the layman's ignorance of medicine can only be described as profound, in regard not only to practice, and the principles on which practice is based, but to the nature and extent of the training required of everyone who purposes to join the ranks of qualified practitioners.

And this profound ignorance, inevitable as it must be with general education such as it is to-day, would perhaps be of little moment if it were as fully and readily accepted, and admitted, as is similar ignorance on the part of the layman in regard to other branches of special knowledge. We do not expect, nor should we listen to, advice in regard to the law, to engineering, to architecture, or even to theology, from persons who have never been trained in these subjects, but in the case of medicine we encounter an entirely different attitude. We find profound ignorance of medicine almost universally associated with an equally profound belief that an absence of knowledge is of no material consequence, and that what the layman may lack of knowledge is more than compensated for by the attribute of "common sense", that rare and precious gift of which everyone is secretly convinced he possesses a more than generous allowance.

Even on the evidence provided by ordinary social conversation, there can be few laymen who do not feel entitled to pronounce a confident opinion on the cause, the diagnosis or the treatment of any ailment, and who do not regard a single experience of a disease, whether at first or second hand, sufficient to justify generalizations such as no wise doctor would venture upon after years devoted to its study.

In these days, when nothing of the old-fashioned reticence on matters of health survives, ignorance has no lack of opportunities for its display, and various are the ways in which it asserts itself. For instance, the curiosity of the layman is easily satisfied by a name, even if it conveys nothing to the mind of the individual who uses it, or to that of his audience.

On every side to-day we hear the expression, "I have got blood-pressure" —an announcement made with so much satisfaction and finality that one is apt to forget that without such a necessary physiological concomitant of life the speaker would not be in a position to supply the information.

And whether it is blood-pressure, or blood-poisoning, or any other of the more fashionable complaints of the day, interest lies in the fact that the sufferer and his friends find a label, however meaningless, sufficient for their intellectual needs, while, to the doctor, it does no more than give rise to a score of pathological questions, each requiring an answer, before light is thrown on the patient's condition and the means of dealing with it. And not one of these

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questions can the doctor put in language which would make it intelligible to his patient. One doctor, in order to supply the demand for a label, will tell a patient that he is suffering from rheumatism, the next that he has fibrositis, and a third that he is the victim of neuritis. The patient can hardly be blamed for convicting the first two of wrong treatment, as well as of wrong diagnosis, if he happens to recover while undergoing treatment at the hands of the third! What a farcical position, and yet impossible to alter so long as the lay mind clings to the mediæval idea that there are so many distinct morbid entities, each of which has its appropriate cure if the doctor is clever enough to recognize the former by name and prescribe the latter correctly.

And if we turn for a moment from these social indiscretions, let us see what help the unfortunate layman can glean from the press. Hardly a day passes without his having the opportunity of reading in a newspaper the views of a journalist, as ignorant as himself, on some medical topic, expressed with that sublime assurance which is so easily accepted as the proxy of knowledge. To add to his confusion one page contains an account of an interview with an anonymous, but, doubtless, eminent specialist, on the subject of the latest medical discovery abroad, and the next page, the report of a learned judge's superfluous but perhaps arrogant assertion that he is not going to be influenced by expert advice emanating from the consulting-rooms of Harley Street. In the first paragraph the consultant is brought forward as the highest authority on a subject with which he is supposed to be familiar, and in the next he is deposed from his pedestal and exposed to judicial ridicule. Further perusal of the paper may reveal the story of a coroner's inquest, at the end of which the jury returns a verdict of "cause of death" in direct opposition to all the medical evidence to which it has listened, or perhaps an account of police-court proceedings in which the defence of a youth, æt. 17, summoned for an assault, is based on the plea that he was born during an air-raid!

It is little wonder that the public attaches so little importance to the training of a doctor, and is ready at all times to accept the assurance of a cure from anyone who has avoided such a tedious and worthless experience. Little wonder, too, that the ignorance of the qualified compared to the enlightened wisdom of the unqualified practitioner is a theme which never fails to stimulate a lively newspaper correspondence, or drawing-room discussion.

Such a controversy usurped the throne of the sea-serpent in the last dead season, and we were treated to a number of wild attacks launched by a successful bonesetter's favoured friends against the medical profession, and a few, necessarily restrained, replies from doctors, whose pens, in such case, are seriously hampered by the law of libel. Not an edifying or helpful altercation, but one which illustrated only too graphically the layman's ignorance of the fundamental principles and controlled methods inherent to the progress of medical science, and his readiness to accept, and even prefer, their spurious imitations.

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And, in addition to ignorance of all scientific principles, such enthusiastic devotion to quackery of all sorts indicates the wide prevalence of an infantile type of critical faculty, so undeveloped that any statement, spoken or written, is accepted without question, and without regard to its authority.

Often is one faced with the question, "But how do you account for A.'s successes?" (A. being the unqualified practitioner most in fashion at the moment) —a question not easy to answer without a general review of its implications, but one quite worthy of our consideration. Let us suppose, for our purpose, that A. practises osteopathy—the most fashionable line in quackery of recent years, but one which has undoubtedly seen its best day, and will be forgotten in ten years' time. To begin with we must remember that an osteopath is just the bonesetter of a previous generation, fortified by a smattering of anatomical knowledge, and glorified by a very simple and ingenuous theory that all disease is the result of displaced bones pressing on nerves or vessels. If you seek the advice of an osteopath for an ache or pain in any region of the body he will find a displaced bone to account for it. You must accept the displacement as an act of faith, because it will not be appreciable to less skilled hands, and it will not be revealed by the most expert X-ray examination.

The treatment, according to your adviser, is a course of manipulation, directed to restoring the bone to its proper position—a course which will cost so many guineas, preferably paid in advance. At the end of the course you are well, you are perhaps better than you were, you are *in statu quo*, or you are worse.

Let us consider these alternatives and their usual reactions on the average patient.

(1) He is well and the pain has disappeared; therefore he has been cured. That he has recovered naturally during treatment, and perhaps in spite of treatment, is a proposition unworthy of a moment's thought. The money was well spent, and the osteopath's praises must be sung at every possible opportunity.

(2) He is better but not cured. A somewhat similar reaction associated with milder enthusiasm.

(3) No change or worse. The patient's reaction is characterized by a feeling of shame that he has been so easily duped, and by a resolution to say nothing about his venture to his friends.

The net result to the osteopath can be easily estimated. If only one patient in ten recovers while undergoing treatment, his fame and fortune are as good as made—at any rate for a time.

Compare the osteopath's position to that of the qualified practitioner. If the latter succeeds it is only his job, and there is no need for the patient to make a fuss about it; if he fails, there is little chance that his patient's friends will not hear of his lack of success.

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Of course this does not represent the whole truth, but it is impossible to emphasize too strongly the fact, so well known to the profession, and so little appreciated by the public, that the majority of human ailments disappear in response to Nature's recuperative efforts, often reinforced by a sublime faith in any form of treatment. "But", says my interrogator, "how do you account for the case of Mr. B., who was given up by all his doctors, and went to A., who cured him at once?" Perhaps the following story, for the truth of which the highest authority can be given, supplies an adequate answer.

Mr. C., a first-class exponent of cricket and football, but approaching an age when, according to the view of his relatives, his energies would be better spent in less strenuous pursuits, had suffered occasionally from a loose cartilage in one knee. Although it rarely let him down, it made him nervous about participating in county cricket. He decided to consult a surgeon, who told him that although an operation would undoubtedly get rid of the trouble, the disability was of so infrequent occurrence as hardly to justify drastic measures. "At any rate", said the surgeon, "think it over and let me know what decision you arrive at". Within a few days Mr. C. made a century for his county without any ill effects, but his cricketing friends, hearing of his previous trouble and being told by Mr. C. that he had consulted a distinguished surgeon, who had said that nothing could be done for him, persuaded him to seek the help of Mr. D., the most fashionable bonesetter of the day. Mr. C. acted on this advice without delay, and with even less delay was given an anæsthetic, had his knee manipulated, and paid a fee of thirty guineas. The results of this adventure were partly immediate and partly remote. Within a day or two a paragraph appeared in a newspaper informing the world that Mr. C., having been given up by a distinguished surgeon as incurable, had been operated on by Mr. D., with such instantaneous success that he had straightway made a hundred runs for his county. Mr. C., rather naturally, wrote to the editor of the paper, and pointed out that his century had been made before and not after Mr. D.'s operation, but his letter was returned with the intimation that the advertisement and correspondence columns had nothing to do with each other. The remote consequence of the manipulation was exactly what might have been predicted. Mr. C. continued to suffer at long intervals from the loose cartilage.

This story, indistinguishable in essence from countless others, is worth relation because it illustrates so well the unreliability of the layman's evidence in regard to what the doctor says and, secondly, the still greater unreliability of a reported cure. These sources of fallacy are so well known to us in the profession that we may be excused if we are not duly impressed by stories of the successful treatment, by unqualified persons, of patients who have been given up by leading physicians and surgeons. Indeed, I am frequently informed of opinions, purporting to originate from myself, which are mere

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travesties of what I have really said, and I am sure that every medical man will agree that he is constantly misrepresented in the same way. Such misrepresentation is often not deliberate, but when a doctor gives advice which is either disagreeable or inconvenient to carry out, the patient is sometimes content, and even ready, to believe that he has received no advice at all. It is difficult, for instance, to make the layman believe that time and rest are such big factors in recovery from illness or injury as we know them to be or, on the other hand, that indulgence in expensive treatment represents, not infrequently, money thrown away.

But my questioner is not yet satisfied. He won't believe that all men are liars, although such a generalization is not very far from the truth, and it is impossible either to accept or refute each and every story of osteopathic cures, because the data on which they are built can never be verified. Is it not better to look at the question in a much broader way, and to examine the theory on which the value of osteopathy wholly depends? If there is truth in the plea that all disease is the result of displaced bones, and that all cures are consequent on their replacement, then the whole science of pathology, which has been laboriously evolved since Morgagni laid its foundations 170 years ago, is fundamentally erroneous and false beyond repair. If there is one word of truth in the osteopathic conception of disease and treatment, every centre of medical teaching and research throughout the world should be cleared of its physicians, surgeons, pathologists, anatomists and physiologists without delay. These, it is true, have not yet succeeded in disclosing the origin or cause of all morbid processes, they make no claim to cure any of them, but, in the last fifty years particularly, they have accumulated an enormous mass of facts, carefully observed and carefully controlled, which are entirely incompatible with the theory of osteopathy. "But", says the layman in his complete ignorance, "I believe there must be something in it". He can't understand—because of his ignorance—that in this matter there is no compromise, there is no middle course. Either the pathology taught in every country is based on sound premises and worthy of prosecution to its logical conclusions, or we must start completely afresh, throw over every medical discovery of the last century, and disown every medical scientist to whom we now do honour. The choice of these only alternatives is one we may safely leave to the public, in spite of its leanings towards heterodoxy, in spite of its yearning for a panacea, and in spite of its eager search for a treatment rather than a diagnosis.

Let me pause for a moment in order to indicate why osteopathy has been chosen, from among all the other pathies and practics and practices which from time to time throughout history have challenged the credulity of the public with so much evanescent success, as an example of quackery in general. In the first place, like many others of recent years—I need only mention Christian Science and cheiropractic—it came from America, where it is now suffering from

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severe competition with newer rivals. In the second place it owes some of its popularity, at least, to the simple theory with which it is exploited. The layman knows little at first hand of the various organs of his body, such as the heart, lungs, brain and spinal cord, but he is on terms of intimacy with bones. He sees them every day on his dinner-table, and he recognizes them as a substantial and palpable part of his anatomy. Dislocation and replacement, as diagnosis and treatment, do not put any strain on his imagination or his knowledge, so that he finds himself on easy terms of educational equality with his adviser, so different from those with a doctor, who may have spent ten or twenty years in search of pathological truths. In a word, the ready diagnosis with its glib explanation, playing on his profound ignorance, cannot fail to make an unanswerable appeal to his so-called common sense. And in the third place I have chosen osteopathy as my type of quackery, because I can truthfully say that 50% of the patients I have seen during the last five years have sought its aid *before* consulting me—with what results I leave you to imagine.

There is yet another consideration which may throw light, not only on osteopathy in particular, but on quackery in general. It has an historical basis, and depends on a comparison of the gradual evolution of the art and science of medicine during the last three centuries with the transient vogue enjoyed by a hundred different forms of quackery during the same period.

From the time of Harvey to the present day the practice of medicine has steadily progressed in efficiency, partly by reason of accumulated observations and experience, in some periods rich, in others meagre, and partly owing to the rapid development of the ancillary sciences which have come to its aid, particularly in the last hundred years. It will be many years before it reaches the status of an exact science itself, but every decade which passes sees a substantial increment in its scientific equipment and in its scientific outlook. To that progress in efficiency the chameleonic records of quackery have made no lasting contribution of any kind. The profession of medicine owes nothing to quackery in the past, has nothing to expect or fear from it in the future, and least of all has any cause or desire to regard it with jealousy. These facts, vouched for by history, should not be overlooked in view of the prevalent idea and suggestion that our indifference to unqualified practice is incited by professional envy.

Before I leave the historical aspect of this question, and lest I should be accused of exaggerating its longevity, let me quote a couple of verses written by an eminent divine, and less eminent poet, more than 140 years ago:

> "When quacks, as quacks may by good luck, to be sure,
> Blunder out at haphazard a desperate cure,
> In the prints of the day, with due pomp and parade,
> Case, doctor and patient are amply displayed.

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" All this is quite just—and no mortal can blame it ;
If they save a man's life, they've a right to proclaim it :
But there's reason to think they might save more lives still,
Did they publish a list of the numbers they kill ! "

In those days the quack enjoyed some advantages, since removed, and the layman, did he but realize it, should be thankful that the General Medical Council was established by Act of Parliament in 1858, in order that (to quote the preamble) " persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners ". He is ignorant of this, and of the fact that the constitution and powers of that body were designed by Parliament solely for the protection of the public. He is unaware that the risk run by patients, referred to in the verses I have just quoted, is in these days materially diminished by the legal enaction that registered practitioners only can sign death certificates.

Perhaps I have given more attention than it deserves to the position of quackery in the public mind, but I have been influenced to do so by considerations of some weight. Quackery flourishes in direct proportion to the *credulity* of the layman, and the layman's credulity varies necessarily not only with his ignorance of science, but with his lack of an educated critical faculty. It is, therefore, an important factor in creating that atmosphere of misunderstanding and distrust pervading the practice of medicine which it is my purpose to investigate.

Unfortunately the subject of quackery cannot be abandoned without some reference to the existence of a professional counterpart which adds very materially to the confusion of the public mind. This is a serious and disagreeable charge to make, but we can hardly plead for acquittal while we watch the profession taking up, and following like a flock of sheep, one new " cure-all " stunt after another as it is offered to us. Sour milk, hormones, innumerable forms of electricity and rays, vaccines and various foreign nostrums, to say nothing of liver, have one and all been exploited with so little *discrimination*, that the public must be forgiven if it fails to distinguish between the methods adopted by qualified and unqualified practitioners. Without diagnosis, discretion or dignity have doctors prescribed each of these in its turn for every intractable ailment, with the result that our wisdom and our honesty, as well as the genuine merits of the curative agent, have eventually become discredited.

With still more reluctance must I confess that there are registered practitioners with seductive addresses not far from Oxford Street, who are not above adding an Abrams' box or the artifices of an osteopath to their diagnostic and therapeutic armaments. It is only fair that the profession's contribution to the difficulties of our problem should be admitted, because, while innocence and ignorance can justifiably be claimed in defence of the layman, it is not easy to advance similar pleas for those who have had the advantage of a

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scientific education. Doubtless the latter derive some comfort, in addition to other forms of consolation, from the popular opinion that they are martyrs to their own broadmindedness.

In order to obtain a true perspective of the gap which separates the layman's ignorance from the doctor's knowledge of the factors underlying health and disease, we must remind ourselves of what is embraced in the comprehensive title of the " medical curriculum ". At the moment of qualification, when he is most conscious of his limitations, a medical practitioner has already spent at least seven years in training and fitting himself for his future responsibilities—a period of probation, sustained effort and repeated struggles with examiners, unequalled by any other form of apprenticeship. During all that time, moreover, he is immersed in studies which bear no resemblance to those which have been pursued by the vast majority of his future patients. In order to gain an insight into the nature of life, he is first introduced to the simplest types of organism as a preparation for the study of those with more complex structure and function and, later, for an intimate acquaintance with the anatomy and physiology of the human body. And while studying these biological principles for two years, he learns the elements of chemistry and physics as a necessary approach to the problems of organic chemistry, bio-chemistry, bio-physics and pharmacology. Not until four years have elapsed in mastering these various subjects does he come into contact with the living patient. A further three years at least are required to absorb sufficient knowledge of pathology, bacteriology, medicine, surgery, midwifery and gynæcology, forensic medicine and public health, together with all their special branches and subdivisions, in order to satisfy the requirements of the examining bodies recognized by the Privy Council.

And yet it is not the *load of information* which he has ingested, and perhaps imperfectly digested, which constitutes the essential difference between his education and that of the layman who is to be his patient. During the whole of these seven years he has been trained in precise methods of investigation, has learnt to think truthfully and clearly, to express his thoughts in exact language, to distinguish between observed facts on the one hand, and theories on the other, to regard *à priori* conceptions with suspicion, and to appreciate the value of experiments and controls. He has, in fact, had the opportunity of developing a critical faculty and a scientific outlook of which the layman, however cultured, is comparatively innocent.

It is not surprising that with this background the newly-fledged practitioner discovers that the discussion with his patients of matters concerning health and disease is one of the most difficult and exacting tasks with which he is confronted. He quickly finds that their answers are unrelated to his questions, that their beliefs are confused with facts, that the identity of " *post hoc* " with " *propter hoc* " is accepted without reserve, and that hearsay evidence is

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treated with the greatest respect. Time and experience may modify, but cannot altogether dissipate this feeling of alienation in processes of thought and experience; and however skilfully he may learn to adapt his terminology to his audience, he must ever remain conscious that *his* values have little in common with those of his patient when medical questions are under review.

Before proceeding to consider the question of education in medicine as a possible solution of the problem, let me summarize in a few words what I have endeavoured to establish:

(1) The layman's ignorance of the principles and practice of medicine is vividly exposed in conversation, in the columns of the press, and in the general friendliness of attitude, both social and journalistic, towards all forms of quackery.

(2) The quality and quantity of this ignorance explain the lack of sympathetic understanding which mars what ought to be a more happy relationship between doctor and patient.

(3) The doctor's education, as revealed by a study of the seven years' curriculum through which he passes before qualification, accounts for the wide gap which separates his knowledge from the layman's ignorance in this branch of learning.

(4) And lastly—and this is probably the most important factor we have to consider—the doctor's education, with its strong scientific bias, tends to develop processes of thought, lines of reasoning and mental values which are entirely unfamiliar and often incomprehensible to those who have been brought up in other schools.

Having arrived, as I hope, at some understanding of the factors which go to make the practice of medicine more difficult and more unsatisfactory than it need be, we are in a position to look around for an appropriate remedy. The one which is now attracting public attention and receiving some measure of general approbation is based on the assumption that a layman's ignorance can be " cured ", so to speak, by a course or courses of lectures purporting to put the problems of medicine into popular language. An attractive proposition at first sight no doubt, but one which should not be adopted, even as harmless, without further investigation.

In the training of a doctor it is accepted without question that something like four years must be spent in acquiring a knowledge of biology, physics, chemistry, anatomy and physiology, without which an intelligent understanding of the nature, structure and functions of organic life is impossible, and in the course of which the student acquires his scientific methods and his scientific outlook. It is held, and I think properly held, that the student is unfitted to tackle the problems presented by diseased tissues and perverted function until he has become thoroughly acquainted with healthy tissues and normal function. Is it wise, is it safe, to skip over those four years, and all

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they entail in the way of indispensable education, and to bring the layman, totally unprepared, face to face with the spectre of disease through the agency of lectures, of the press, or of the wireless? Is the layman any better off for an increased familiarity with medical jargon if he remains ignorant of the essential factors underlying the reactions of living organisms to their environment?

It must not be supposed for a moment that I would throw cold water on attempts to enlighten the public mind in regard to the broad principles of hygiene and preventive medicine, to the elementary facts of heredity, or even to the more straightforward aspects of eugenics, but what shall we say about lectures on cancer, on maternal mortality, or the dangers of middle age? Only a few days ago I listened with great interest to a stimulating address given by Dr. Robert Hutchison on "Hypochondriasis, Individual, Vicarious and National". He expressed with his customary facility and felicity the anxiety which you and I must share in regard to the popularization of medicine. We know, and the layman cannot know, that superficial smatterings of medical learning are already a powerful and prevalent factor in promoting mental ill-health throughout the community, and we cannot contemplate an increased dissemination of such dangerous germs without uttering a note of warning. Phobias in relation to cancer and syphilis are already responsible for too many unhappy and useless lives—a state of things for which the medical profession is by no means free from blame. Let us be careful lest we bring up a generation to map out a *régime* of daily life in terms of exercise and sunlight, and to replace its natural appetite by a craving for calories and vitamins. Perhaps, for selfish reasons, the profession would be sorry to see the health-addict entirely disappear from our midst, but it is sufficiently humane and patriotic to regard the prospect of widespread health-consciousness with genuine alarm. After all, in health we are not conscious of the ills to which everyone is heir and, if our attention is called to them, we are happily inclined to put them aside as a possible menace to others, but not to ourselves. So clearly do I realize the psychological danger of any attempt to scatter seeds of knowledge on unprepared soil that I hesitate to accept the popularization of medicine as a satisfactory solution of our problem.

Nor are we without useful experience of the products of such teaching if we call to mind some of our patients from the other side of the Atlantic, where it has been tried out for a longer time with characteristic zeal. Doctors would all agree that the American who displays complete familiarity with medical terminology, and who is ready to discuss at length all the most recent therapeutic discoveries, is quite impossible to treat satisfactorily more especially if the patient happens to belong to the fairer sex.

If, then, as I suspect, a superficial gloss of medical knowledge without a scientific background is not only dangerous to the community, but fails to

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improve the co-operation of patient with doctor, is it possible that more cultivation of the background and less attention to the gloss might lead to better results?

Is it too outrageous to submit that, if general education were reorganized in such a way that every student acquired some elementary acquaintance with scientific methods of research, with scientific lines of thought and with scientific history, even at the expense of other more time-honoured subjects, many difficult problems, in addition to that which we are considering, would be brought nearer to solution?

In the medical world at the present moment there is a widespread feeling that our curriculum has become overweighted by the additions to special knowledge which have accumulated during the last thirty years, with the result that its passage involves too much memorization of facts and too little training of thought. If this criticism is well founded, it is surely applicable, with even greater force, to education in general.

It is acknowledged, in some quarters deeply deplored, that civilized life has been revolutionized by the progress of the sciences, and there is no reason to suppose that less revolutionary times are in store for us. Equally accepted is the belief that no single individual can hope to keep pace with that progress in all its branching paths. But there are fundamental principles and laws inherent in all scientific advances of which the layman is lamentably ignorant, and a knowledge of which might make all the difference to his outlook on his environment. The man in the street is familiar enough with the term "scientific research", but has little conception of how scientific observations are registered and controlled, how deductions are tested and hypotheses scrapped. He lives in another world, and is content to welcome a "new discovery", sensational enough to attract notice in the press, as a bolt from the blue, or as a species of miracle, and to accept it without interest in its origin, its evolution, or the authority on which it is proclaimed.

A desire for the inclusion of biology, the science of life, in general education is being voiced at the present time, and it has my sincere support and sympathy, chiefly in the hope that this subject, if accepted, would be regarded as a channel whereby students could obtain an insight into the methods and principles of scientific research and progress rather than as a vehicle for facts to be memorized for examination purposes. The chief argument for the inclusion of biology in the general curriculum is usually based on the plea that everyone should learn something about the nature and facts of life before taking on its responsibilities—an argument no stronger, in my opinion, than that afforded by its potential value for the kind of training which the lay mind at present lacks.

To observe, follow and appreciate the scrupulous precision and cautious control of any scientific inquiry would not only engender an early and enduring relish for Nature's verities, but avert the flagrant and pathetic credulity so

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characteristic of those who have had no such education. Further, a more general desire to seek after truth, and a greater disinclination to accept statements from all kinds of sources at their face value, would be of immense advantage to the future of civilization as a whole, quite apart from their effect on the practice of medicine.

It will, no doubt, be contended by some that the introduction of such teaching would be to the detriment of general culture—that symbol of mental enlightenment and discipline so beloved of the pedagogue, and so elusive of definition. But can that contention be seriously upheld? If it is agreed that we are living, and that our children will live, in a scientific epoch, and that the achievements of science are still in their infancy, is it not reasonable to believe that culture in the future will be beyond the reach of anyone who is unacquainted with the elements and the history of science, and who can bring no sense of perspective to bear on its new developments? If, as we hope, an era of peace and increasing internationalism lies before us, will not the giants of science loom at least as large in public estimation as the giants of war? To-day, their names, and their outstanding contributions to the edifice of life as we find it, are completely unknown to the large majority of the community.

Addressing, as I am, an audience interested in psychological medicine, and able to appreciate the fact that the human brain represents the highest, most intricate and most specialized produce of organic evolution, and is responsible and necessary for every thought, word and action of every inhabitant of the globe, may I ask how many of your cultured lay friends could describe the history of our knowledge concerning its structure and functions, or even name those men to whom we owe that insight?

A pertinent inquiry best left unanswered, but just as surely as general education will gradually become more scientific in response to the demands of the age, so will culture change its complexion in conformity with changing values, and only so retain respect.

My time and your endurance are reaching their respective limits. May I submit, as the outcome of this investigation of the factors underlying the spirit of unrest and misunderstanding which pervades both parties concerned in the practice of medicine, the following propositions:

(1) That lay ignorance, inevitable with general education as it is to-day, is chiefly responsible for our trouble, although regrettable tendencies in the profession itself must be counted as contributory causes.

(2) That there is much danger and little profit to be expected from the attempt to give the layman, with no scientific background such as would enable him to appreciate the aims and difficulties of practice, a superficial smattering of medical knowledge.

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(3) That the only prospect of improved conditions in the relationship of doctor with patient, as in many other problems, political, social and economic, depends on including in the purpose of general education some insight into the elementary principles of scientific methods, the spirit of scientific inquiry and the history of scientific achievements.

In conclusion I would venture to suggest that a Royal Commission, investigating the same problem, could arrive at no other conclusions, and that its report would have as little effect in expediting the necessary reforms as the discourse to which you have given so much patient attention. However, nothing is more certain for the future than the changes in education and culture which I have indicated, and meanwhile we must just muddle on, mindful of our duty to keep medical practice free from the taint and taunt of quackery, conscious of the difficulties of our patients as well as of our own, and full of faith in the ultimate triumph of truth.

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A COMMON STANDPOINT AND FOUNDATION FOR PSYCHOPATHOLOGY.

By IAN D. SUTTIE, M.B., Ch.B., F.R.F.P.S.Glasg.

IN a recent lecture on " Individual Psychology and the Bases of Science," Dr. Crookshank declares that Adler " like Socrates . . . condemns . . . the pursuit of knowledge for its own sake, as a futile attempt to transcend the limits of human intelligence " (p. 54). Again (p. 48): " . . . the real problem is that of right living—the pursuit of knowledge for its own sake is a delusion and a snare, a delusion inasmuch as absolute knowledge is unattainable, and a snare inasmuch as it draws us away from the study of conduct ".

It is quite plain from these quotations that Individual Psychology has a normative standpoint—which distinguishes it from science—and that it studies its facts with a purpose, *i.e.*, it is at best an applied science. Of course, " pure " or " systematic " science is a " limit " or ideal. All knowledge must have its human aspect, namely its interest ; but the aim of science is to reduce this preferential factor to a minimum, or rather to present the facts in such a way as will serve not one only, but all interests equally well. This is a somewhat subtle and controversial point, but vitally important. Science regards purpose as a variant of bias, it seeks then to get rid of specific bias, substituting a generalized interest which we call the desire for knowledge for its own sake, *i.e.*, " pure " science. It is this, the mainspring and essential subjective characteristic of scientific pursuits, that Adler explicitly and roundly condemns ; and he claims the title of scientist ! Is this " right living " ? Is there not a morality of intellect as well as of conduct ? Did not Socrates—to whom Adler is likened—consider that clear thinking was a pre-requisite to right living ?

We must equally deny Adler's title to be regarded as a logician and philosopher like Socrates. True, he studies in the same field—that of ethics ; but every mathematician is not a Laplace or an Einstein, nor every student of life a Socrates. Socrates' method was in the highest degree analytic, definitive and critical. But for his normative interest, he might have founded a positive science of behaviour. Adler points out, quite rightly, the integral totality of each human life, and its extreme individuality. But this feature, of course, forms a barrier to its analysis into constant factors and mechanisms. I shall return to this ; but I would point out here how complacently Adler resigns

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himself to this limitation, and gives himself up henceforth to description and generalization.

Let us now return to the central idea of Individual Psychology—that a human being should be considered as a unique totality rather than as a sum of standard mechanisms, of which only the deranged ones concern the physician. No one would deny this as a fundamental principle of treatment, except those whose interests are to treat patients wholesale or to exploit some special panacea. Freud, in formulating the principle of over-determination, clearly recognized that it is impossible to consider " thought " as if it worked in a number of simple isolated causal series. He was perhaps the first to proclaim explicitly the relationship of mental illness to the life-history of the patient, and to show its utilitarian aspect in the patient's present situation (advantage-of-illness, defence, substitution, etc.).

The value of the Individual Psychology movement lies in the stress it lays upon the adaptation of the individual to his social environment and upon vigorous constructive living. The Freudian technique, and to some extent outlook, seemed until lately affected by the tacit assumption that *all* maladjustment to life proceeds from mental conflict, *i.e.*, endo-psychic disharmony of some kind. The resolution of this conflict, then, was the whole aim of analysis. The reintegration of the personality and its readjustment to life were not looked upon by analysts as the physician's concern. The analyst regarded himself as an operating surgeon. In these respects the patients were to be left to Nature, but, where there seemed no prospect of natural recuperation, the patient was merely regarded as unsuitable for treatment.

Freudian analysis, then, is a highly specialized treatment, and correspondingly limited in its application. In this respect Adlerism is an expansion, and may prove helpful in mental hospitals. But I hope to show that there is no logical incompatibility between practical Adlerism and the parent doctrine to justify a schism ; and the price Individual Psychology has paid for its individuality has been the loss of scientific impetus. Indeed, as I have said, the principle of Individual Psychology itself is a negation of science ; for science could not exist in a sphere where things and events were truly individual. Science exists to find regular sequences and identities in difference. Individuality can only be understood scientifically in so far as it can be resolved into particular patterns and quantities of definite factors, etc. ; *i.e.*, reduced to terms of what is *not* " individual ".

The aim of science is to provide reliable knowledge, which means conceptions that can be verified against actual experience. Science also must always provide for its own growth and modification, both by observation and by inference from its existing theories. It is essential for science that different observers should be able to compare their experiences by language and to impart them to students, so that the rising generation need not spend its

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whole life in attaining for itself the skill and experience won by its precursor, but can acquire this quickly, and use it as a foundation for further discovery on its own behalf. Now, every one of these essential functions of science depends upon its conceptions being defined. If they are left vague they can be neither proved nor disproved; they cannot be used as a basis for further inference; they cannot be used in discussion or teaching with any certainty of being understood as they were intended. Science therefore is compelled to analyse totalities into standard mechanisms, constant factors, etc., even at the expense of an admitted artificiality and inadequacy. It is compelled, too, to seek definiteness, as against the mystics, who measure everything with an elastic rule so that they can always say, "It is just exactly as I expected".

In their own way species and organisms are also individual, yet the biologist compares the former in regard to resemblances and differences, and the physiologist analyses the latter into organs, tissues and "functions." The psychologist, it is true, has to deal with a yet more integral and individuated subject, and, in so far, has a more difficult task and greater likelihood of artificial analysis; but his purpose is the same—to make his knowledge of one case facilitate his understanding and treatment of another, and to pile up a body of abstract knowledge about minds in general which shall be acceptable to all observers as a basis of co-operative study, and shall be readily communicable to students. The fact of the extreme integration and individuation of mind is the principal obstacle to the progress of psychology; it is indeed well to bear this in mind; but it is not well to make it our starting-point for scientific discovery. If we do this—thus tacitly denying the possibility of analysis—how can we expect to attain general formulæ that are largely true of each individual?

Broadly speaking, Adler is concerned to describe total meanings and situations, and that on a normative basis. He does not produce a psychology at all, but a practical ethics. Granted it would be better to have this wisdom without psychological knowledge than the science without the wisdom, but why not both? Why take up a starting-point that tends rather towards descriptive generalizations, and condemns the detailed analytic formulation of mental process and development which we owe almost exclusively to the Freudian school? In scientific work it is better to be definitely wrong than vaguely right, for then it is possible to test and correct our ideas. It is Freud's great merit that he strives always to produce clear and articulated formulæ which can be demonstrated to be right or wrong. He does not usually rest content with vague generalizations which are "probable" or "possible", but unprovable. He himself takes tremendous liberties with method, but, while this may exasperate the reader, it always leaves him thinking. The wisdom of Adler and the philosophy of Jung raise no problems that their platitudes do not easily lull to sleep. We may read these latter writers without

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stimulus, or neglect them without loss, but we must reject, or agree with Freud.

Turning now to the mainspring of Adler's teaching—the struggle for superiority. Freud would say that achievement has ultimately a sexual value. Adler says, "The striving for gratification is only one of the million varieties of the striving for superiority". For both, this generalization is rather a philosophic "coping-stone" than a working hypothesis. Both seem to be in error; but the type of error is characteristic of each. Freud finds the mainspring of all vital striving in "Eros", a definite instinct which is equipped with its own special organs, hormones, etc., and which is universal in the higher animals. It is therefore a *vera causa*. Adler finds it in a struggle for social superiority. But the social habit is virtually confined to man, baboons and a few other species; and, even so, social impulses cannot be operative in infancy. Freud, then, has taken a real and elementary factor in life as his theoretical "mainspring", while Adler has taken a highly abstract aspect of highly evolved behaviour for his. Both get into serious difficulties over aggressiveness, and seem rather to regard it as a separable component instinct than as, what it more probably is, a mere aspect of all thwarted instinct. The strength and weakness of Freud's theoretical position can be detected, but Adler's is much more obscure and intangible.

Up to a point Adler's clinical intuition has served him well. An enormous amount of human behaviour aims, directly or indirectly, at securing for the subject the regard of his fellows. Even crime, strife and greed, anti-social as they are, are largely motivated by distorted social ambition; so also is paranoia. We cannot suppose that mere "animal" wants are the incentive that lead a millionaire to run every risk and adopt any method to increase his already unspendable wealth. Such a struggle for wealth beyond any possible instinctual need or enjoyment, must be actuated by some desire for enhanced power, prestige, consequence, esteem or love. Our social tolerance of it also seems a tacit recognition that the motive is a social, not an instinctual one, and therefore not "shameful" or "blameworthy". I have actually observed clinically in a boy of five to six the metamorphosis of the desire for possessions for the sake of use and enjoyment, into a desire for ownership for the sake of the right to lend or to refuse, *i.e.*, for the social importance that ownership brings.

So far we are in close sympathy with Adler's clinical outlook, but we wish to know more about the composition and development of this "superiority goal". We know that man has an instinctual ancestry and infancy, and desire to know how and from what instinct roots his social strivings spring. We wish to know why different men seek different kinds of superiority—masochists indeed may seek supremacy in inferiority. "Social superiority" indeed is a concept so general and abstract as to have little more than

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descriptive value, which is all very well in a popular book, but is a poor starting-point for inductive science. It is again characteristic that Adler overvalues this abstract generalization. Freud's fault on the other hand is that, having traced to a common instinct origin two apparently widely divergent types of behaviour (sexual and self-preservative), he undervalues this developmental differentiation. We might say that Adler looks at the tree of life from above, and apprehends as the central fact of life the aspect of self-assertiveness. Freud, on the other hand, having traced one branch of the vital impulse—the sexual—back into its undifferentiated root and finding no hiatus, regards the latter also as sexual. Then, since all other branches, too, are continuous with root and stem, he exclaims, "Behold Eros!" Yet, aware of aggressiveness as an aspect of much vital activity, Freud reifies this as a death-instinct in a way that at least is definite. He faces the difficulties which confront him, and rarely takes refuge in mystical generalities. But the difficulty of fitting the death-instinct into the tree of life is insuperable. In his efforts to overcome it Freud even tries (in the course of two or three chapters of *Beyond the Pleasure Principle*) to identify it with the self-preservative instinct, but in a way sufficiently definite finally to expose its own fallacy. We ought to remember that while Freud is attacking these problems with a view to definite solution, the leader of the Adlerian school finds time instead for writing a succession of popular books.

Dr. Crookshank rightly condemns feeble and facile eclecticism, yet, since Freud, Adler and Jung have worked for long at the same problems, it is inconceivable that the views of any one of them should be totally devoid of truth. Moreover the splitting of psychopathology into camps—Freudian, Adlerian, Jungian and "heretics"—is not for the good of the science. Must we heretics be illogical if we refuse to subscribe without reservation to Freud or to Adler? Is the distinction between these two not largely an artefact of partisanship and personal jealousy, and itself therefore illogical? I suggest that it is. I suggest that we can take up a perfectly logical position that recognizes the insight of Freud and the intuition of Adler, yet rejects as illogical certain contentions of each. Those who accept part of Freud's findings have always been open to the reproach of being half-hearted eclectics. Though ordinarily this reproach could be dismissed, yet in this case there is good reason—Freudians argue—to watch for exceptionally subtle bias. It is therefore *possible*—to take my own case—that though I was an enthusiastic Freudian until the "metapsychological" papers appeared, the resistances which were not evoked by the sexual aspect of Freud's theory of mind may have been dormant, and suddenly seized upon the illogical and unscientific aspects of the "metapsychology". Here, as many have observed, Freud abandons empirical-inductive method for what (for him) is intellectual libertinism. But during the course of ethnological studies this year it occurred to me that there was an apparently definite limitation to the

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application of the Œdipus explanatory principle and a correlatively definite rift in the logic of the Freudian psychology. This suggested to me that the "borderline" Freudians, like myself, might not really be so irrationally eclectic as we are considered. We might actually have something positive in common. It is easy for a great leader and pioneer to impress unity upon his followers; it is extremely difficult for independent investigators to reach identical conclusions, *i.e.*, to find themselves in agreement. What then, is the ground, common yet undefined, to Freud, Adler and ourselves? If we can discover such common ground, we can oppose a logical barrier to all extremists and repel the accusation of intuitive eclecticism.

We might even—by this discovery—create better conditions for psychopathological research in the future. For, lacking a common standpoint and some common premises, isolated workers are at a great disadvantage in every way; while, at the other extreme, the members of a school tend to have so much in common that individual initiative suffers. A leader tends to impose his own limitations upon his followers. Why should scientific workers form "sects" of "followers", valuable as "schools" are for propaganda where beliefs and objectives are defined from the beginning? To learn a prescribed lesson, a school requires a master; even in departmental science special tasks must be allotted, and work co-ordinated by an organizer or director. But for psychological research this arrangement is absurd. Beyond the enunciation of a method that will ensure mutual intelligibility, each collaborator should be as free as possible to exercise his own insight and initiative. I suggest that the analytic school has suffered from too much leadership. The genius and versatility of Freud have given him the first word and the last in nearly every application of his theory. May it not be that this very genius has a negative aspect, and inhibits originality in his followers, prescribing too narrowly the mode of interpretation? In the hope therefore of assisting co-operation among "unattached" workers, I have endeavoured to discover the logical highest common factor of Freud and Adler which I can accept.

Adler finds man's dominant incentive in the striving for power over his fellows, and recognizes that this begins in the nursery. Freud sees in all culture the sublimated metamorphosis of ungratified sexual wish. He also allows that this striving originates in infancy. He is indeed more emphatic than Adler on this point. Rank and Ferenczi recognize that dissatisfaction and ungratified longing begin at birth. Indeed we must suppose that these aspecific needs are coextensive with conscious life, and that some insufficiency of instinct-satisfaction is the incentive to all human endeavour; for, with satiety, effort fades. What, then, is the source of the unappeasable and undefinable longings that have driven man to his infinitely varied cultural achievement?

For the moment we shall suspend the Freudian interpretation of this

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formless and plastic urge. Our prime justification for doing so rests on this fact—upon which it appears both Freud and Adler are agreed—that this struggle for " dominance ", or whatever else it may be, begins in the pre-genital phase of infancy. It begins, in fact, the moment the mother fails to respond in a way entirely satisfactory to the infant ; from that moment all effort is directed towards making good the lack. It begins on the withdrawal of gratifications that have already actually been enjoyed, and which must therefore be replaced by sublimated interests. It begins, therefore, before the sex instinct has matured and been denied its objective. This longing and striving is not a mere appetitive urge, either nutritive or genital. It supplies a generalized emotional need corresponding to the de-specialization of instinct that occurs in human infancy (and in the higher animals) as I have discussed elsewhere. (" The Mother : Agent or Object," *Brit. Journ. of Med. Psych.*, 1932). The instincts of self-preservation in lower animals are directed with the most elaborate precision upon the outside world. In the human infant, on the contrary, self-preservation can only be attained by the continuous ministrations of the mother. Spontaneous efforts on its own part would not only be futile, but would actually endanger the infant's life. Of necessity, then, the self-preservative instincts in infancy manifest themselves almost exclusively in attachment to the mother. Its expressions are sucking, clinging and crying —all of which have the mother as their objective. We may suppose, if we like, that the vague sensual rudiment of what becomes the reproductive instincts appears about this time in a similar amorphous condition and with the same objective—thus aiding survival. From this almost non-specific instinctual root are differentiated all the instincts and culture interests of later life; but the process of development is to some extent forced upon the child. It is weaned, and must accept other food. As it grows up it has to do things for itself that formerly the mother did for it. She withdraws (perhaps bestows upon a younger baby) much of the direct personal interest it used to enjoy, and it now finds that her constant companionship can only be retained, not as the sole and direct object of her attention, but only by participating in her interests.

The deprivation of the mother, then, is the starting-point of the development of interest which has other than instinct goals. For his adaptability in this respect man has to pay two prices : first a prolonged and helpless infancy, and, secondly, a never completely specified, and therefore never completely satisfied, desire to do or to have " something else ". Of course it is never completely satisfied unless in the state of being " in love " or in the mother's absorption in her baby in turn, or in the præcox regression to an imaginary infancy. All these conditions are satisfying, and consequently accompanied by a proportionate withdrawal of interest from the real world. Innumerable instances could be given of an intuitive apprehension of this longing for a

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" communion of spirit " with somebody else. Perhaps it is a more general motive for religion even than that of propitiation for guilt. The latter, in fact, is itself very little more than the sense of severance from others. Every social ritual has as its aim the enhancement of the sense of fellowship and the dissipation of the sense of isolation.

This view differs from that of Freud in not accepting the persistent mother-child bond as specifically sexual, and in according therefore to the jealousy of the father only a secondary and contingent *rôle*. Indeed it is the father who is jealous of the baby as such, whether boy or girl, since it has already supplanted him in an important emotional respect. In general, this suggested modification of the Freudian theory does not appear either to be itself illogical, or to leave out much that is of universal application.

In regard to Adlerism, again, I am merely objecting to the conception of " superiority " as the goal of struggle, and to his failure to bear in mind that all social sense and striving must itself be an adaptation of instinct. Adler says sex is only one particular way of attaining superiority ; I would say that to attain superiority is only one particular—and not the best—way of binding other people to you. We strive to make other people feed us, need us and heed us. We wish to be of consequence in the world. But behind all these protean longings and strivings is the need for love (in the widest sense). This need in the infant is identical with the instinct of self-preservation as well perhaps as with the rudiment of Eros. Culture therefore must be regarded as developed from both, but particularly from the former instinct. After all, in human life the sex instinct is not so completely divorced from its original biological expression as that of self-preservation, though it may be more thwarted. The latter has to suffer such profound modification in the adaptation to infancy, and later to culture, that we must look upon it as the chief source of plastic interest.

I cannot here work out the significance of this and of the mother's handling of the infant for the genesis of the psychoses. For the moment I am only concerned to show why so much of human social behaviour assumes for Freud and for Adler such different aspects. For the former they are sublimated incestuous strivings or the reactions thereto. For the latter they are attempts to establish a " social superiority ". Freud seems to miss the mark when he attributes this primeval mother-craving to a definitely sexual urge. He is right to the extent that cultural drive originates in longing for the mother; wrong in calling it exclusively sexual longing. Adler's service consists in pointing out the essentially personal and social form which all this striving takes. All interests except the appetites have a personal origin and reference, *i.e.*, depend upon fellowship. Of course Freud expressly mentions this child-mother relationship, but, having done so, he does not allow it to affect his theory of the genesis of culture and psychopathy.

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My suggestion is that all cultural, all non-appetitive need originates with the infant's gradual privation of the mother, and that character formation and the differentiation of ideals, ambitions and " life styles " represent the various ways in which different people " make good " this primeval loss. Normally, I suggest, it is the mother herself who sets bounds to the infant's desire for her. And in the very act of denial she can hardly avoid indicating to the child-mind how it can best retain, recover or replace her. This is where the child, boy and girl alike, begins to covet the father's strength, authority and assured position with the mother. To them it appears as one way—the " dominant " sadistic and sexual—of recovering possession of the mother. Another way is to be a " good " and " helpless " baby, or to regain the mother's admiration and approval by being " great ". Yet other techniques seek, by surrendering the mother, to replace this lost " communion of spirit " by religion, by art, by comradeship, or by love. The girl (and even the boy) also may take the father as a substitute for the mother, and this satisfactory personal attachment is one reason why women are not driven to such intense cultural achievement as men. But, naturally, at the inception of this need for increased "*rapport* ", the small child is impressed by the value of goodness and greatness. To it, it must seem that adults can have babies and mates, and can never be threatened with loneliness of spirit. The striving to command attention, to be needed and tended, originates in this crisis.

We can then apprehend the relation of Freud's and Adler's outlook. For Freud the male child seems always to model himself on the father in order to recapture the mother, or a substitute, human or cultural. For Adler, the child seeks always to be of importance (in a wider than sexual sense) to other people. Freud does not recognize the general nature of this emotional craving ; Adler does not recognize its origin as an instinct privation in the gradual severance of the child from the mother. Obviously they have each got hold of a different aspect of the truth. So we unattached workers, far from being illogical eclectics, have merely refused to be bound by the limitations of either school.

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AMNESIA IN RELATION TO CRIME.

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When a defence of insanity is put forward in answer to a criminal charge amnesia for the crime is not infrequently affirmed, in fact East (2) states that it is more often alleged than any other mental anomaly. The defence of amnesia is at times raised when there are no grounds for supposing that the prisoner is suffering from loss of memory, but there are undoubted cases where the crime, generally homicidal in character, has been committed during a disorder of consciousness or the memory of it subsequently has been lost. It is therefore of the greatest importance from a medico-legal point of view to distinguish between real and simulated amnesia. While amnesia may be simulated in cases where there is no mental disorder present, there are also instances where loss of memory is feigned by individuals in whom there are other reasons for regarding them as mentally abnormal. In this connection it must be realized that memory also is sometimes malingered; a prisoner who by reason of insanity accompanied by amnesia has escaped the responsibility for his crime may presently arrive at the conclusion that a persistence of his loss of memory will tend to keep him confined in an asylum, and therefore he asserts a remembrance of his crime, the story of which he is likely to have become familiar with at his trial or elsewhere. Not all such false memories, however, are definitely malingered. A patient may have heard the story of his crime so often that in the end he becomes convinced that he actually remembers it.

In order to investigate this subject we have examined and carefully inquired into the histories of 100 male inmates of the State Criminal Asylum at Broadmoor at whose trials amnesia for their crimes was alleged. The cases have not been in any way selected, except that as far as possible the more recent admissions to the asylum were taken; even so, many of the cases are several years old. This would seem to show that the defence is not so successful as its frequency of presentation would pre-suppose. It was noticed that practically all the patients were members of the labouring or lower middle classes.

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Age-Incidence.

An analysis of the age of incidence at the time of trial shows a gradual increase up to the fourth decade, followed by a corresponding decline in the number of cases as age advances. Amnesia is rarely put forward as a defence under 20 or over 60 years of age.

Table I.

Under 20 years	3
21–30 ,,	26
31–40 ,,	37
41–50 ,,	19
51–60 ,,	11
Over 60 ,,	4

The age of incidence among those who were regarded as malingerers or as doubtfully genuine was definitely lower than among the accepted cases. Out of 14 simulated and 8 doubtful cases there were only 3 over 40 years of age. No correlation could be established between the age-factor, and the likelihood of a persistence or recovery of the loss of memory.

Family History.

Inquiry into the family history revealed the fact that a psychopathic inheritance figures largely in these cases, and its presence may be regarded as of sufficient magnitude to constitute a predisposing factor. The findings in the cases were as follows:

Table II.

Insanity	32
Chronic alcoholism	28
Tuberculosis	14
Epilepsy	7
Suicide	7
Crime	7
Congenital blindness	1
Somnambulism	1

These figures include all cases, whether genuine or assumed, and it was found that a psychopathic heredity was present among the latter as noticeably as in the former.

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Personal History.

The presence of a psychopathic predisposition in these cases is well recognized, and investigation into the past history of a patient alleged to be suffering from amnesia becomes of great practical importance. Sullivan (4) pointed out that "in any case where amnesia, complete or partial, is alleged with regard to a crime involving a prolonged series of complicated and apparently purposive acts, it is reasonable to expect—though there may be exceptions to the rule—that there should be proof of the existence of one or more of these predisposing factors." Our findings, as shown in Table III, support this opinion.

Table III.

Chronic alcoholism	38
Mental stress	30
Head injury	20
Previous insanity	14
Previous amnesia	12
Malaria	12
War history (blown up, severe wounds, etc.)	10
Financial straits	10
Epilepsy	9
Shock	5
Somnambulism	1

In compiling this table only definite histories were included. Here, as with the family histories, positive findings were found with almost as great a frequency among the doubtful cases as in the genuine ones. It may therefore be concluded that while neuropathic traits are commonly found when loss of memory is alleged, their presence is no ground for the assumption that the amnesia is genuine.

Alcoholism.

In both the family and personal histories chronic alcoholism occupies a prominent position, especially so when it is recollected that only marked cases were included, and that in not a few others the addiction seemed from the available history to be above the present day average. A definite history of persistent teetotalism was obtained in only 3 cases.

Head Injury.

This is always a difficult factor to estimate; in all probability a majority of people can produce evidence of a head injury of some kind at one time or another; and when an individual thinks it is to his advantage he will no doubt

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magnify the occurrence. As far as possible, discrimination was exercised in evaluating the severity in the cases under consideration, and only definite histories, *e.g.*, absence from work due to the injury, unconsciousness at the time, or a resultant scar which could be examined, were taken into account. The result, 20%, is probably higher than would be obtained for the general population. Eager (1), investigating 100 cases of head injury, found that 12% exhibited states of amnesia. He further states that a common complaint was of pressure in the head, becoming aggravated before the amnesic attack.

Epilepsy.

Automatism with subsequent amnesia due to this cause has earned a favourite position among the possible defences to a charge of homicidal or other grave crime, but it is becoming increasingly recognized that loss of memory from this condition following serious crime is not of such frequent occurrence as was at one time supposed. On close investigation it is often found that the allegation of epilepsy is without a sound basis, and in fact not infrequently it is admitted by the patient after his trial that the idea of pleading epilepsy was evolved either by himself or his advisers. We know of one case where a man charged with murder was located in the prison hospital in a bed next to an epileptic, and the latter coached him in the signs and symptoms of epilepsy. At his trial the prisoner put forward a defence of epileptic automatism and thus escaped the full penalty of the law. East (3) points out that " a history of fits is usually forthcoming, and although there may be no more than the screaming fits of childhood or fits of temper in later years, they are sometimes offered to the jury as evidence of epilepsy ". On the other hand, a true epileptic who commits a crime for which he is legally responsible may trade on his history and simulate amnesia to avoid the consequences of his act. The following case illustrates this :

CASE 1.—Male, æt. 32, a carter. Patient is a genuine epileptic, and has had frequent severe fits since admission to the asylum. On the day of the murder he left work and spent about an hour and a half gambling with two friends, during which time he lost all his money. When play ceased they stood together talking at the corner of a street, and patient asked one of his friends to stand him a drink. This was refused. He then asked for a penny for his 'bus fare, and this was given to him. Patient then walked away, but returned in a few minutes and cut his friend's throat. He immediately ran away and disappeared in the crowded throughfare. About half an hour later he arrived at his brother-in-law's house looking dazed and worried, and said that he had had a bit of a row. When arrested later he said, " I don't remember anything. I remember putting my horse away and I don't remember anything more."

The behaviour of the murderer after the crime, his efforts to escape, the fact that he told his brother there had been a row and the motive for the crime (loss of his wages) made one sceptical as to the genuineness of his amnesia, and this was verified later, after the trial, when the patient admitted that the loss of memory was assumed.

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It is possible for an epileptic to commit crime during his first attack—a point that should not be forgotten.

There are cases, however, in which, although not epileptic, the amnesia is genuine enough, but the defence is not satisfied to leave it without the trappings of epilepsy.

In 9 only of our cases was a positive history of epilepsy, supported by subsequent observation, obtained. One was a case of Jacksonian epilepsy in which there was an authentic history of fits following a compound fracture of the skull.

Malaria.

Sullivan (4) mentions that the importance of malaria in connection with these cases has been emphasized by Dr. Anderson, of Glasgow. In our series a history of having contracted this disease was elicited in 12 cases—a percentage somewhat higher than would probably be found in an average group of 100 unselected males of similar ages.

Previous Insanity and Amnesia.

Fourteen per cent. had previously been insane, and 12 cases gave authentic histories of earlier attacks of amnesia. In addition there were several patients in whom a history indicating some previous slighter form of mental abnormality or tendency to nervous breakdown under strain was obtained, but they are not included in the figures given here.

Somnambulism.

There was one genuine case of this condition, which is worth quoting in full:

CASE 2.—Male, æt. 31, fireman. Crime: Murder of wife. Patient is a somnambulist and there is a strong family history of somnabulism; his eldest child and, with one exception, all his brothers and sisters, are sleep-walkers. On the morning before the crime patient met with a slight accident, a fall, and struck his head and elbow on the ground. He was treated at an ambulance station, but there is no evidence that he was rendered unconscious by the fall, or that the injury was in any way serious. During the day he complained of head pains and took some stimulant, and in the evening visited his doctor, who stated that the injuries were quite slight, and at the time of the visit the patient was quite sober. After the visit to the doctor he appears to have had a few more drinks, but evidence was forthcoming to show that when he returned home he was not under the influence of alcohol. He went to bed with his wife at about 11 p.m., and remembers nothing more till he woke to find himself battering his wife's head with a shovel. The shock of this was so great that he fainted. Later, when he realized that his wife was dead, he attempted suicide. He has no recollection of getting out of bed to fetch the shovel, and there was an entire lack of motive for the crime, as he lived amicably with his wife.

In several of our cases the crime was committed during the night or early morning, and the patient therefore had difficulty in stating when the amnesic

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period began, the state of clouded consciousness being more or less continuous with the dissociation of sleep. While these cases were genuine, there were no histories of earlier somnambulism, and after a full consideration of their circumstances it was felt that they could not properly be classed as true somnambulism.

One special feature to be noticed is that, while a very few cases were of impaired intellectual development, marked mental deficiency was absent Moreover no patient admitted the existence of certified mental defect among his relatives. This would suggest that repression or dissociation resulting in amnesia are not psychological defence phenomena which are exhibited by lesser developed minds.

Type of Crime.

In making this analysis only the more serious crime was included in those cases where more than one offence was committed.

Table IV.

(1) Murder	71
(2) Attempted murder or wounding	19
(3) Indecency	6
(4) Arson	2
(5) Acquisitive crime	2
Total	100

It is thus seen that the majority of crimes which are followed by amnesia are those accompanied by strong emotional reactions, as in murder and attempted murder. The graver the crime and the more repugnant to the normal mental content of the patient, the more likely it is to have been committed during a period of clouded consciousness, or the knowledge of it to have been repressed subsequently. Nearly 50% of the cases of murder were against a relative or sweetheart, and if we also include those of attempted murder or wounding of relatives or sweethearts, 61% of the cases are accounted for.

Table V.

(1) Murder of relative or sweetheart	48	61%
(2) Attempted murder or wounding of relative or sweetheart	13	
(3) Murder of other persons	23	29%
(4) Attempted murder or wounding of other persons	6	

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Suicide.

In 27 cases the patient attempted suicide at the time of the crime, and it is noteworthy that in all but one the crime was against relatives or sweethearts. Thus in 26% of cases in this series the offence was one of murder or attempted murder of a relative or sweetheart accompanied by attempted suicide, in all of which the amnesia was regarded as genuine.

The Amnesias.

After studying the past history, and observing and examining the patients individually, we formed the opinion that 78 could be regarded as genuine, 14 were almost certainly malingerers, several on their own admission soon after reception into the asylum, and 8 were classified as doubtful.

Table VI.

(1) Genuine	78
(2) Assumed	14
(3) Doubtful	8

Of the 78 who were regarded as genuine, 30 have recovered the lost memory, while in 48 the amnesia persists.

Memory recovered	30	
Amnesia persisting	48	including 3 paramnesia and 1 epileptic equivalent.
Total	78	

The recovery of the lost memory in the 30 cases that have cleared up was a gradual process taking place during the early months after the crime; the majority gave some time less than 6 months as the period in which remembrance occurred. One patient alleged that his memory returned to him three years after the crime, but the truth of this statement is to be doubted; another gave three days after the crime as the time, but this was an isolated and unusual history. Most of these patients state that their memory returned to them without any marked effort on their part to recover it; a frequent description is "it just came to me". Actual attempts to remember, to penetrate the fog, seemed to lead to frustration rather than otherwise. They all emphasized the gradualness of the process. A sudden return of memory in an alleged amnesia is therefore to be regarded with scepticism; in all probability the amnesia itself was malingered, or, alternatively, the memory is assumed when the patient realizes that a persistent amnesia may contribute

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to his continued detention in an asylum. It is, of course, quite open to either a true or simulated case to invent a gradual return of memory.

Certain characteristics of the amnesic period were present in genuine cases with fair constancy, while in the simulated and assumed cases they were either absent or subject to considerable divergences. The beginning and end of the amnesic period are likely to be a little blurred, and the genuine case cannot accurately define the instant when his memory left him. He may remember with some clearness a definite act, such as having his dinner, and then state that, although he knows he got up from table and went out, he can only recollect this in a hazy way. The time of return to normal consciousness is often even more indefinite. As regards the actual amnesic state, the loss of memory prior to the committal of the crime is of much shorter duration than that occurring subsequently. In most cases it is only a matter of minutes before the crime, whereas it may be some hours or even days after it before normal consciousness resumes control.

Where the amnesia is only partial and the patient has a confused memory of the murder, the ideas accompanied by marked emotion are more likely to be remembered than those with less emotional tone; for instance a patient who says he remembers coming away from the crime, but not the crime itself, is in all probability a malingerer. This does not apply in cases of melancholic raptus, where, as Sullivan (4) points out, it is the explosive act itself which is most likely to be missing.

Statements made soon after the crime and seeming to show that the patient is fully aware of what he has done do not necessarily indicate malingering when loss of memory is alleged later. Several instances occurred in the cases under review illustrating the truth of this. For example, a man who killed two of his children was reported to have said to the policeman arresting him, "I did it for the best" and later, when charged, "Do what you like; they are gone. I wish I had done for the lot and myself too". The amnesic state in this case extends from half an hour before the crime to twenty hours afterwards, is undoubtedly genuine, and has now persisted unchanged for many years.

Paramnesia.

The development of a false memory is somewhat of a rarity; only three of our cases exhibited this phenomenon.

CASE 3.—Male, æt. 55, a retired business man. There is a strong psychopathic inheritance and his father committed suicide. He shot his sister with a shot-gun, and then turned it on himself by attaching a bootlace to the trigger and firing it with his foot. He was found seriously wounded with the gun still in position. On reception at the asylum he stoutly denied that he committed the crime, and stated that he and his sister had gone for a walk and that he had taken the gun with him to shoot a rabbit, but that he saw no rabbits and did not fire the gun.

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He further states that while walking in the field he saw two men, who first shot him and then his sister. He remembers putting his handkerchief to his head and seeing his sister lying on the ground; after that he remembered nothing until he found himself in hospital. He still maintains his innocence, and although he has been questioned several times since his reception some years ago he has not varied in his story. It is quite clear that he believes it himself, and that it is a genuine case of paramnesia.

Types of Mental Disorder.

While many cases may be regarded as no more than episodes in the course of an attack of some recognized psychotic disorder, there are others in which the crime and subsequent loss of memory are in the nature of transitory phenomena in individuals of psychopathic constitution. Impulsive crime followed by amnesia occurs with some frequency in states of depression, but is almost unknown in maniacal phases; it is rare in schizophrenia and in paranoid reactions.

Melancholia.

Many of the depressive states are associated with delusional ideas which are ultimately responsible for the ensuing criminal outbursts. Conviction that a wife is unfaithful may lead to her murder, or a father who is depressed about his business and fears his children will not be provided for may kill them rather than that they should suffer, apart altogether from the truth of his forebodings.

The following case illustrates the type of crime associated with melancholic states, and also exhibits the characteristics of genuine amnesia described above:

Case 4.—Male, æt. 52, bootmaker. Murdered his daughter, æt. 5, by cutting her throat with a razor. His family history is defective; one cousin was insane and a brother suffered from fits. His past history gave evidence of previous mental breakdown of depressive type on two occasions. He says his doctor thought he would have to certify him. For some time prior to this crime repeated unemployment and financial difficulties made it a problem for him to provide for his family, and he became depressed and broken down in health. On the day of the crime his wife was out and he was sitting brooding in the kitchen, while his daughter was playing in the garden. A neighbour's child refused to allow his girl to hold a doll and slapped her face, whereupon his daughter ran in to him crying. He took up a razor that was kept in the kitchen for paring corns and cut her throat. The child called out, " Don't, Daddy ", and screamed. This attracted the attention of his stepson, who summoned help. When this arrived he was still bending over his daughter cutting at her throat. When he was pulled away he did not resist, and appeared to be " quite dazed and not to know what he was doing or where he was ". On admission to the asylum he was reported to be " in a condition of melancholia with stupor ".

The amnesia was total, and the amnesic period extended from the time his daughter ran in from the garden until an hour or more afterwards. Exactly how long elapsed between the time his daughter came into the kitchen and the attack is not known, but in all probability it was only a few minutes. As regards the end of the amnesic state, he vaguely remembered his neighbours pulling him by the

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shoulders, and this was followed by only a confused recollection of the happenings of the next few days. His memory for this blank period and the recollection of his crime came to him gradually during the fifth and sixth months after the crime.

Paranoidal States.

While there was no case of true paranoia, several of the patients exhibited delusional ideas, usually combined with a depressive element. The delusional cases included those with the more marked histories of alcoholism.

CASE 5.—Male, æt. 44. Murder of daughter by cutting her throat and attempted suicide by same method. Mother was alcoholic and a cousin was sent to a reformatory. He had been strongly alcoholic and several times charged with drunkenness. For some months prior to the crime he had given up drink. He was out of work and depressed on that account. He had hallucinations of sight, complaining that lights were played upon his walls by neighbours for ulterior motives. He thought that he was a marked man. He objected to having his hair cut by a barber as he had discovered marks on his head; he also thought people were trying to hypnotize him. He studied phrenology. Many of these ideas persist, over twenty years later. He is reticent, and says that while he knows he was right about the lights and other things, it would be better for him not to explain. He believes there to be some connection between the lights and the camera obscura. On the night of the crime he remembers playing cards with his family until about midnight, and then his mind is a blank until he came to himself in hospital nine days later. The amnesia persists unchanged. The story is that at about 1.30 a.m. a son of his awoke to find his father in his room with a razor in his hand; he said "Don't", and his father kissed him and went away. Shortly afterwards his father called to him; he went upstairs and found his sister lying in a pool of blood; both she and the father had their throats cut, and the latter said, "Give me a drink and let me die". There was no apparent motive for the crime.

The patient is constantly agitating for his release from the asylum, and while this would explain his reticence about his delusions, it lends added reason for belief in the genuineness of his amnesia, which he describes as "the one thing he has to thank God for".

Schizophrenia.

Amnesia is rare in dementia præcox, and only 3 of our cases could be classed under this head. Amnesia without other mental symptoms is not likely to be due to dementia præcox. Two were cases of murder and the third of attempted murder, and in all the criminal act was carried out with an impulsive violence characteristic of this condition. Two of them had been certified insane on previous occasions.

In all three memory has returned; in fact two of them allege they do not remember that it was lost. It may be that these are not really instances of amnesia. Perception is good in this disease, and the mute, apparently stuporose case is frequently aware of all that is going on in his vicinity; it may be that a similar state of affairs exists in their amnesias.

CASE 6.—Male, æt. 32. Attempted murder of wife and two children by attacking them with a knife. There is a strong family history of insanity; his father

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committed suicide and a sister and uncle are insane. His mother was alcoholic. He served in France during the war, was shell-shocked and treated in military mental hospitals. He was certified in 1915. He has delusional ideas regarding his treatment in military hospitals, alleging that a foul disease was injected into him. He is very religious, and believes he has had to suffer for "the one above".

On the night of the crime he and his family went to bed in the usual way. About half an hour later he started to behave in a strange manner and made "unusual noises". In alarm his wife left the room; he followed her. Eventually she succeeded in quietening him, and they returned to bed, when he suddenly attacked her and the children with a knife which he had secreted. Then he rushed out of the house and ran for some long distance practically naked.

On admission to the asylum his mind was a blank for a period of about fourteen days covering the crime. He was solitary and negativistic; for nearly two years he refused either to see his wife and children or to accept letters from them. Latterly he has improved and is now more approachable; he says he remembers all he did, and that he has never suffered from any loss of memory. He states that he did what he did on account of the disease he was inoculated with at Netley.

Epilepsy.

The following case may be quoted as an example of genuine amnesia due to epilepsy:

CASE 7.—Male, æt. 31, a gardener. Patient is a genuine epileptic and has severe fits at long intervals. He states that his fits started after leaving the army; at first they were mostly nocturnal, but later he had them in the daytime as well. On the day of the crime he and his wife visited a neighbour, and whilst on the visit he complained of feeling ill, with pains in the head. He returned home, accompanied by his neighbour. As he continued to feel unwell he went into his back yard for some fresh air, and the neighbour went with him. He remembers turning to come in, and the next thing he remembers is seeing the neighbour lying on the ground with a wound in the head and himself with a chopper in his hand. He then realized that he must have wounded his neighbour, and gave himself up to the police. He was in the habit of chopping wood in the yard. There was no apparent motive for the crime. The loss of memory for this period persists.

Psychoneuroses.

The following is an example of amnesia in a case of psychoneurosis:

CASE 8.—Male, æt. 24. Two cousins had tuberculosis. Always timid and neuropathic, reacting abnormally to ordinary strains of life. Murdered a woman with whom he had been on intimate terms for some months.

On the day of the crime they were out for a walk and quarrelled; she flew at him and he caught hold of her, then he remembers nothing more until he saw her lying dead at his feet with her head battered in. He became frightened, and ran home saying he had killed a woman. This amnesia has persisted unchanged for several years. There was no clear motive for the crime apart from the quarrel, and it was clearly unpremeditated, as the prisoner had no weapon, and used his boot to inflict the severe injuries; and, finally, there was no attempt at escape.

Some of the characteristics of simulated amnesia are shown by the following case:

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CASE 9.—Male, æt. 25. Negative family history. Patient was a heavy drinker, but apart from this there was no medical history of importance. At the time of the crime he was living with a friend and his wife, and he shot the latter while the husband was away from home. He stated that drink was free in this household, and that he had been indulging heavily. He remembered the husband leaving the house in the morning, and believed he went to his room. Then there was a blank, and when he came to himself he seemed to feel something gripping at his hips and falling from somewhere on his head. Then another blank, and he remembered pouring out a drink, discovering a terrific din in his ears and a smell of cordite in his nostrils. Then he walked out of the house and found his revolver on the ground outside, looked in the window and saw his victim on the ground. He returned to the house, and wrote a note to the husband admitting his guilt. This loss of memory was not regarded as genuine, and since the trial he has admitted it to be false.

The amnesia was patchy, and the emotional experience—the actual shooting—was alleged to be forgotten, while such an incident as pouring out a drink was remembered. In spite of his assumed amnesia he immediately and unhesitatingly accepted his responsibility for the crime.

THEORETICAL CONSIDERATIONS.

Psychologically amnesia may be regarded as being dependent on one of the following conditions:

(1) Failure of association.
(2) Dissociation.
(3) Repression.

The first group consists of cases in which there is a defect in the fixation of impressions and a failure of association of ideas, and includes the imbecile and dement who are unable to register and retain their impressions, and consequently cannot reproduce them. Amnesia of this type is termed "anterograde." This class of case has not been included in the present paper.

Amnesia due to dissociation or repression is always dependent upon a failure of reproduction and is retrograde. In normal memory, in addition to an impression being fixed, retained and reproduced, it must be recognized as forming a part of our previous experience. Some cases show illusions of memory, and tell a complicated and entirely false story with obvious conviction.

In endeavouring to interpret the underlying mechanism in the varieties of amnesia encountered it is necessary to consider—

(1) Cases of total and permanent amnesia.
(2) Cases of total and temporary amnesia.
(3) Cases where the crime was remembered for a short time after it was committed and then completely forgotten.
(4) Cases where there is a confused memory of the crime, but no details can be remembered.
(5) Cases in which a false memory is developed.

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Dissociation.

Cases produced by this phenomenon provide the most dramatic instances of amnesia. When dissociation occurs there is a sudden rupture in the stream of consciousness and a gap in the continuity of ideas. The content of consciousness of one moment is independent of and unaware of that of the preceding moment. It is in such a period that the criminal act is committed. Later another rupture of the stream occurs, and the earlier field of consciousness associated with the normal personality of the patient reasserts itself, and the experiences and acts committed between the two breaks are then completely obliterated from the memory. This is similar to the condition found in somnambulism, where the somnambulistic state is totally ignorant of the ordinary or normal state. In these cases it is while the dissociated system of ideas is in the field of consciousness that the crime is committed, and on return to the normal state of consciousness there is total amnesia of the crime and of the events which immediately preceded and followed it.

Dissociation will explain some of the cases of Class 1 with total and permanent amnesia. The tendency in these cases is for the beginning and end of the amnesic period to be more sharply defined than in those due to repression. This dissociation of ideas may also afford an explanation of certain cases which, while professing no amnesia of the crime, yet state that they felt that they had to commit it, and that some force other than their normal self was directing and compelling them. Such patients will probably say that they at first resisted, but ultimately gave in to this force. There is a dissociated system of ideas, but here the patient is aware of its existence and fails to realize that it is part of his own consciousness.

Repression.

A second and larger group of cases are to be explained by the mechanism of repression. Some of the cases in Class 1 and those in the remaining classes are accounted for by this process.

As a result of the crime a conflict is established between the crime complex and the customary trend of consciousness representing the normal personality; this is solved by a repression of the painful memory of the crime and its attendant circumstances.

In cases where the amnesia is complete and sudden in onset (Class 2 and some of Class 1), it is reasonable to assume that the patient was aware of his actions at the time of committing the crime, but that the conflict so set up was so acute that repression took place almost simultaneously and total amnesia was immediately established, in many to remain for ever, and in others to clear up as the conflict becomes less acute with the lapse of time.

In the third class it may be considered that the conflict is less acute, and

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therefore repression will not take place till some time afterwards, during which period the patient would remember and be able to give some account of his crime. It is this class of case, where the criminal may make statements to friends or to officials at the time of arrest, or even voluntarily give himself up, that calls for special care, for these patients are likely to be considered *primâ facie* as malingerers. Genuine cases of this character undoubtedly do occur, and they can be explained if this application of the conception of repression be accepted.

Amnesia produced by repression is recoverable, and in a good number of cases the memory does actually return, thus differing from those due to dissociation, where the condition is permanent. As has been described above, the return of memory is gradual; at first the recollection is hazy, dim and lacking in details and slowly becomes complete. This reappearance may be brought about by association tests and subsequent questioning, by dreams, through a chance word or action of a nurse or other patient, or most likely without any obvious stimulus.

This recovery of memory may be explained by supposing that after the trial and sentence, and with the passage of time, the need for repression becomes less urgent, and there is, therefore, a relaxation of vigilance on the part of the repressing forces.

Cases of the fourth class comprise those in which repression is not absolute and the patient has a confused idea of the crime, but is unable to recall the details. The ideas most coloured by emotion are the ones remembered; for instance the patient may remember the actual crime, but not his subsequent movements. In these cases of partial amnesia the memory is not patchy, as is often alleged by the malingerer.

Finally, in the fifth class a false memory is developed. This is a step further than an amnesia due to repression, and a possible explanation is that in these cases the conflict is so acute that a simple repression is insufficient, and a false memory is projected into consciousness in order to obtain mental equilibrium. It is usual to find that cases of paramnesia connected with crime are combined with projection.

Conclusions and Diagnosis.

While the differentiation between true and simulated amnesia is often a simple matter, at times much difficulty may be experienced, and much time and attention to detail is required before one may arrive at a decision.

(1) Amnesia cannot be diagnosed on the patient's word alone. His story must be checked by known facts, independent evidence being absolutely essential before an opinion can be formed. The first account given by the patient is of paramount importance, and should be recorded with all the detail

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he can provide. Subsequent variations in his story are to be regarded with scepticism. While real recovery of memory does not occur until some weeks or months after the crime, allowance must be made for some slight alteration in the memory defect from day to day in a few cases where the loss of memory is only partial. A patient who remembers points in his favour and conveniently forgets everything else is probably malingering.

(2) A history of chronic alcoholism or of other indications of a psychopathic personality, including a previous loss of memory, is frequently elicited.

(3) The existence of a neuropathic heredity is to be expected in a fair number of cases.

(4) The character of the alleged amnesic period is of foremost value. In genuine cases the beginning and more especially the end are frequently blurred, and usually the loss of memory prior to the committal of the crime is of much shorter duration than that of the subsequent period before normal consciousness resumes control. Where the amnesia is partial and the patient has a confused recollection of his acts, the ideas accompanied by marked emotion are remembered, while those with less emotional tone are not.

(5) Statements made soon after the crime showing a knowledge of the act are not incompatible with genuine amnesia due to a later repression.

(6) The crime is frequently without motive, and is carried out in a way which shows that the individual was not acting with premeditation, and he makes no attempt to escape from the consequence of his actions.

(7) A sudden return of memory almost certainly indicates malingering.

Our thanks are due to the authorities of the Home Office for permission to publish this paper, and to Dr. H. P. Foulerton, Medical Superintendent of Broadmoor Criminal Lunatic Asylum, for allowing us access to the asylum records.

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MISIDENTIFICATION AND NON-RECOGNITION.

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IN 1923, under the title, "The Illusion of Doubles in a Case of Systematized Delusional Insanity" (1), J. Capgras and J. Reboul-Lachaux described for the first time an interesting syndrome of non-recognition. The case was that of a persecuted and megalomanic woman in whom there existed a condition of agnostic identification without disturbance of sensory or memory images. The patient postulated a series of "doubles" replacing the various persons of her environment, even her husband and daughter being included. During the course of a few months she complained that she had been shown one thousand doubles of her daughter. The person confronted was appreciated to resemble exactly the known individual, but on account of some subjective disorder, the ability to identify her was lost and the belief in "doubles" brought forward in order to explain this state of non-recognition.

Since the publication of this case, the descriptions of a large number of similar illusions have appeared in the French psychiatric journals, and the condition has become established under the term "Capgras's syndrome." More recently various allied states have been described, and attempts have been made to give a psychological explanation of them. There having been, as far as the writer is aware, little, if any, reference to these syndromes in the English journals, the present paper is an attempt to fill this gap.

NORMAL AND MORBID PROCESSES OF IDENTIFICATION.

The healthy sane person confronted with a known individual compares his appearance and conduct as he now sees him with his memory images of him, and, these agreeing, he recognizes him; he identifies him as a result of a judgment passed *a posteriori*. Disorders of this process resulting in false recognition or non-recognition may be classified under three headings:

(a) *Hyperbolic misidentification.*—This condition is sometimes met with in cases of mania. As a part of their general exuberance, flow of ideas, and quickness for catching a likeness, they will in a facetious and flippant manner

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call the individual confronting them by someone else's name and may actually insist that he is the latter. The mistaken identity is usually based on some quite inadequate resemblance, and like the maniac's delusion, is seldom held as a serious conviction.

(b) *Amnesic misidentification.*—In dementias and in confusional states, inaccuracies occur because, through loss of memory or clouding of consciousness, the full significance of the persons confronted and remembered is not grasped.

(c) *Delusional misidentification.*—This has been described in cases of paraphrenia, dementia paranoides and in melancholia. Here perception of the object is unimpaired and memory is intact, but misidentification results because a judgment, based on a subjective evaluation rather than on objective findings, is made *a priori*.

Capgras's Syndrome.

Capgras's syndrome " the illusion of doubles," is an example of delusional misidentification ; it is not a case of false recognition—the finding of an unexpected similarity between one individual and another. It is, on the contrary, a state of non-recognition—an inability to identify the confronted person, though recognizing his appearance and behaviour. The example illustrating this syndrome that I have at my disposal is not altogether satisfactory, owing to the fact that it is not the actual person that the psychotic fails to recognize and imagines to have a double, but the letters written by that person. Psychologically considered, the mechanism is essentially the same, the letters being as much a part of the individual as his appearance, clothes, behaviour and so on.

Emily C—, married, æt. 50, was admitted into the Dorset Mental Hospital in July, 1931, suffering from recent melancholia. She was in a state of acute depression with agitation and self-accusatory ideas. There was also evidence of paranoid delusions. She would moan, groan and wring her hands, insisting that her family was ruined and her daughter seduced, and that these things had come about as a result of her wickedness. The paranoid ideas concerned her neighbours, whom she considered to be false friends and partly responsible for her misfortunes.

An investigation of the family history revealed the fact that a sister had been in this hospital from 1896 to 1898 suffering from melancholia.

The personal history showed nothing of note up to about a year prior to the onset of her illness. She had always enjoyed good health and had had no previous mental breakdown. Childhood and school life were uneventful. At the age of 20 she became a hospital nurse, at which work she continued until her marriage at the age of 26. Her husband was a lawyer, and six years after marriage they migrated to Canada. Their life there was a happy one ; they were in comfortable circumstances and had many friends. There were two daughters, both healthy children. Mr. C—, however, though a kind and considerate husband and father, would appear to have been an unstable, extravagant and impractical man. He lived expensively, never saved a penny, was given to gambling and speculation

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and was ready to rush in on any hare-brained scheme. He had been induced by business friends to invest his money in some highly speculative patents, and following the failure of these he was unable to meet his liabilities, and in 1929 was declared a bankrupt. Being left practically penniless, it was necessary for the family to break up. Mr. C— remained in Canada and has not been heard of since. The elder daughter also remained in that country, obtaining employment as a hospital nurse.

Emily, with her younger daughter, returned to England, living in dependence upon an aunt and sister. The anxiety and disgrace associated with her husband's bankruptcy, the break-up of her home and separation from the husband and daughter she adored, the humiliation of being forced to seek the aid and support of relatives, superimposed upon the endocrine readjustment associated with the climacteric, would appear to have induced a state of depression that finally justified certification.

Since admission to this hospital, except for a short phase of temporary improvement, she has remained in the same depressed, self-absorbed, agitated and deluded state. Perception, memory and orientation at no time showed any impairment. There was complete indifference to her surroundings, together with a strong feeling of depersonalization. Food could be tasted, roses still smelt sweet, music could be followed, but these things meant nothing to her—they brought no joy, but rather made her feel more miserable. She felt and realized that there had been some profound alteration in herself.

About six months after admission a more acute state of agitation and dejection ushered in a new symptom-complex—the illusion of doubles. She now insisted that the letters she received from her two daughters were not written by them, but were facsimiles written by someone else. A visit from her aunt convinced her for a period that the letters from the younger girl were genuine, but nothing that the aunt or anyone else could say would induce her to change her views regarding her elder daughter's correspondence. When questioned on this subject, she would admit that they had every appearance of having been written by her daughter, but that she felt that this was not so. The letters brought her no pleasure, and therefore they must have been facsimiles. Sometimes, in order to bolster up her arguments she would make use of secondary rationalizations. She would suggest that the contents of the letter were too flippant and did not express her daughter's feelings, and therefore could not have been written by her. On other occasions she would insist that she could detect differences in the handwriting—in one letter the symbols were too small, while in another she believed that she was able to discern an alteration in the formation of a capital. The capacity of inventing differences was also noticed in Capgras's case, for in that woman the slightest change of expression was enough for her to conclude that she was in the presence of a double.

Explanatory Theories of the Syndrome.

Capgras, commenting upon his original case, suggested that the illusion had been determined by the occurrence of a feeling of strangeness or foreignness, which was in contradiction to that of recognition. Capgras further pointed out that the syndrome was associated with a paranoid tendency to distrust and of an urge to investigate details. This theory, that a feeling of strangeness is responsible for illusions of misidentification and non-recognition, has been enlarged upon by Paul Courbonand and will receive further consideration.

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Halberstadt (2) sees in this syndrome the activity of a pre-logical mentality analogous to the minds of primitives. It is pointed out that normal perception is orientated towards the understanding of an objective reality and of this only. All that has a purely subjective value is eliminated, in this contrasting with the dream. In the primitive, however, this contrast does not exist, his perception being orientated differently. For him objective reality is only a part of the total reality; it is mixed with and often subordinate to mystic and imperceptible subjective elements.

In 1924 Capgras (3) described a further case of the illusion of doubles, which he attempted to interpretate psycho-analytically. The person investigated was a solitary, ill-tempered and intellectually retarded woman, who had from childhood shown marked father-fixation with hostility toward the mother. She was certified insane at the age of 18, presenting certain features of an atypical schizophrenia. There was indifference to her surroundings, mannerisms, asociality, ideas of inferiority, and delusions of persecution by the parents, with marked aggressiveness towards them. From 1915 to 1924 she had been certified five times. Taken out of hospital at the request of her parents she would, after a short period of attempted re-adaptation, again become so excited, unstable and hostile as to necessitate recertification. In 1924 two fresh symptoms developed—ideas of incest and the illusion of doubles. Regarding the former, it transpired that two years previously she had made erotic advances towards her father and she now commenced to speak openly of these desires. But at the very time at which these incestuous longings emerged into consciousness, she developed the illusion that her parents sent "doubles" to visit her instead of coming themselves. As in the other cases, there was no intellectual deterioration, speech and writing were correct, memory and orientation were good. In Capgras's opinion, at the age of 18, when she first became mentally ill, the incestuous complex emerged into consciousness in symbolic form and for six years was masked by psychosis, *i.e.*, the idea of persecution by the parents. At the end of that period, as the result of further disintegration of the psyche, the compensatory psychotic mechanism failed to repress the libidinous aims, which now presented themselves consciously and undisguised. There were obscene advances towards the father and anger at his failure to respond. The mother also was clearly appreciated as a rival. Further mental deterioration was shown by the presence of auditory and olfactory hallucinations, visions of spirits and thought-echoing. However, even at this stage efforts at defence mechanism were still attempted. The woman, while openly declaring her incestuous desires, took her father for a stranger of the same appearance. It was not to her father but to his double that she had made voluptuous demonstrations. Clearly in this case the illusion of doubles is a final attempt to veil the incestuous desire.

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E. Larrive and N. J. Jasienski (4) conclude that the syndrome is a defence-reaction opposing the various forces which endanger mental synthesis. In support of this theory they describe a woman suffering from a chronic hallucinatory psychosis with unsystematized persecutory delusions. The interesting feature of the case is the illusion that her poorly endowed lover had a rich aristocratic, handsome and potent double.

Finally there is Courbon's theory (5), which is based on the hypothesis of cœnæsthesia. But before examining this it will be convenient to describe other syndromes of misidentification closely allied to the "illusion of doubles."

Syndromes of False Recognition.

In 1930 Jacques Vié (6) demonstrated a variation of Capgras's illusion, so enlarging the original conception. He termed Capgras's case an illusion of negative doubles, for in that condition there is a perception of non-existent differences resulting in a negation of identity. The variation he termed the illusion of positive doubles, where there is an affirmation of imaginary resemblances. Among the cases illustrating this latter syndrome, Courbon's "illusion de Frégoli" (7) is mentioned.

This case concerns a woman suffering from delusions of persecution and grandeur with an erotic taint. She belonged to the lower class, was uneducated and of little intelligence. She had, however, since childhood neglected the practical side of life, spending all the money she possessed at the theatre. She became convinced that her persecutors were "Frégoli"—that is, they had the power of incarnating themselves within the bodies of the people about her in order to torture her. There is in this condition no disorder of sensory perception, for the patient does not find any physical similarity between the various transformations of "Frégoli." It is not as in Capgras's syndrome a state of agnostic identification; it is, on the contrary, a condition characterized by false recognition without false physical resemblance.

More recently (1932) Courbon, in conjunction with Turques, described a further subdivision of the illusion of positive doubles. This syndrome has been named the "illusion of intermetamorphosis" (8). The subject of this condition was a woman suffering from melancholic depression with ideas of persecution. She at first complained that two old hens had been substituted for her own two young ones, also that her new coat had been replaced by a dilapidated and shabby one. Later she became aware that people around her transformed themselves—women were changed into men, young people into old ones and so on. Her husband changed his conduct, manner and expression, therefore it was not her husband but some neighbour incarnated within him.

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The " illusion of intermetamorphosis " differs from the " illusion of Fregoli " in that besides false recognition, there is also false physical resemblance. The following case is instructive in that it illustrates the presence of both positive and negative doubles :

Bessie N—, æt. 55, married, was admitted into this hospital December, 1931, suffering from unsystematized delusional insanity. There was nothing relevant in the family or personal history. She married at the age of thirty-five and had no children. The climacteric commenced three years prior to certification.

Her psychosis had a gradual onset dating back to 1929, with vague noises in the head and a feeling of " change in herself." She became easily fatigued, lost initiative and interest in her home. Alongside of this there had been growing up a feeling of suspicion and distrust regarding her neighbours, and particularly a Mr. T—. The psychosis burst out a month prior to admission, with hallucinatory phenomena and paranoid ideas. There was a revolving machine under her bed, making a continuous clanging noise. In order to molest her, electric wires had been fixed to her house. By this means voices were put into her head, which interfered with her thinking. Mr. T— was spying on her and was at the bottom of the conspiracy to torment her. Finally she noted that her maid-servant had altered in appearance—she was shorter than she used to be. This convinced her that it was another of the machinations of Mr. T—, who was now " impersonating " her servant, with the object of getting the patient away from her home. With this same object in view he also impersonated the doctor who visited her at home (illusion of positive doubles). She showed no intellectual deterioration ; memory, orientation and attention were good. Since admission to the hospital metamorphosis has been a constant occurrence. People have visited her stating that they were her husband and sister. Though they had the appearance of her relatives, she felt and was convinced that they were really unknown persecutors impersonating her relatives (illusion of negative doubles). On other occasions Mr. T— had impersonated the doctor. She could tell it was not the latter because his clothes did not fit him, and both his manner of walking and his expression had altered (illusion of positive doubles with false physical changes). Once she met two tall men in the corridor ; she knew immediately that they were not " natural " men, but impersonators. That the hostility felt for Mr. T—, a former friend and frequent visitor to her home, was an over-compensation for repressed erotic desires was suggested by the hallucinatory content. She continuously heard the voice of the despised Mr. T— proclaiming that he had violated her.

Cœnæsthesia and Delusional Misidentification.

According to Paul Courbon (5) all conditions of delusional misidentification are primarily due to a disorder of the sense of cœnæsthesia. The secondary elaborations and variations result from disorders of affectivity, of judgment and of the imagination.

Cœnæsthesia (9) is defined as the " feeling of the function of life of the organism " which accompanies all perception, and of which the individual is normally unaware. The feeling of cœnæsthesia is only appreciated when it ceases to adhere to perceptive experience. In the healthy-minded person this only takes place in moments of fatigue or exhaustion. At such moments

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sensations no longer seem a part of him and are no longer integrated within the psyche, a sense of depersonalization resulting. So long, however, as the critical sense is intact the experience is appreciated as subjective. In an early case of schizophrenia of which the writer had experience this disorder of cœnæsthesia was for a long while the most prominent feature. The patient would complain that in some obscure way she felt different, but she could never explain the exact nature of the change. She would, like Alice in Wonderland, sometimes feel that she was shorter, sometimes that she was taller than she used to be, though in the early stages of the psychosis she had a full realization that these feelings were imaginary.

In its most benign form this disorder of cœnæsthesia appears as a subjective state. The psychotic recognizes the individual confronting her, but she no longer has the same feeling towards him as formerly. At this stage she will admit that this is due to some change within herself. Courbon states that very often this is the only symptom for a long period during the early phase of many chronic delusional psychoses.

In the next phase of depersonalization the condition is complicated by a disorder of affectivity. The psychotic will now no longer recognize the individual confronted, but she will not confuse him with someone else. If there is little imagination there will be merely denial; if, however, there is imagination, the belief will be supported by rationalizations. She will invent differences, suggesting, for instance, that the person confronted resembles the real person, but that he has darker hair, brighter eyes, a louder voice, etc. This is Capgras's illusion of doubles. In this stage, as a result of the affective disorder, the subjective experience has been projected into the outer world. The psychotic now believes that it is the object which has changed, and which no longer produces the same effect upon her. As my own case stated, " This letter has the appearance of being from my daughter, but I feel that it is not from her and therefore it is a facsimile."

The next clinical syndrome is characterized, not by non-recognition, but by false recognition. The psychotic identifies in the persons around him the persecutors of some previous environment. This false recognition is due to the added factor of a morbid affective judgment, and is due to his ability to perceive in the individuals he confounds some subjective elements in common, *i.e.*, they are identified because they all produce some common subjective state. It is this mechanism that is believed to be responsible for the " illusion of Frégoli."

Where there is gross disorder of the imagination, and especially if this is stimulated by the contradiction of the physician, the psychotic will invent physical resemblances between the individuals confounded in order to support his illusion. This added disorder of imagination accounts for the " syndrome of intermetamorphosis."

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A Psycho-analytical Contribution.

Despite the vast amount of work that has been done during the past nine years by French psychiatrists on the illusion of doubles and allied syndromes and the very large number of cases that have been described, it would appear not without interest that the symptom-complex has never been demonstrated in the male. This anomaly has been commented upon by Larrive and Jasienski, but no explanation has been suggested. Presumptive evidence would suggest that no male cases have been described because the syndrome does not occur in men and that the mechanism is peculiar to women.

Why should this condition not occur in men, and what is there peculiar to female psychology in order to account for it in women? The theory brought forward here is a psycho-analytical one, and depends upon the modifications of the pre-Œdipal phase and the Œdipus situation as it occurs in women. For it has long been realized by psycho-analysts that there is no neat parallel between the male and female. The original hypothesis of an "Electra" complex, the exact counterpart of the Œdipus situation, does not satisfy the facts and has been rejected.

It is recognized that the feminine and masculine minds are fundamentally different in their mechanisms and methods of approaching a situation, but it is extremely difficult to generalize on this matter or to determine any absolute point of divergence. Popularly women are said to be more intuitive in their judgment of things, more superstitious, narrower in their outlook, to confine their interests within a smaller circle, and to lack self-confidence in facing an unusual or awkward situation. Men, on the contrary, are believed to be more rational in their judgment, to be given to finding an intellectual or logical explanation of observed facts, to take a broader outlook and to have a wider horizon of interests, and finally to have more confidence in the face of difficulties. This popular conception is probably not far from the truth. In an attempt to summarize these observations it could be said that men are on the whole more objective, and tend to take the outer world very much for granted. Women, on the contrary, are more subjective, and their whole attitude towards the environment is coloured by a mistrust of the reality and absolute significance of the object, with a resultant tendency to correct their objective findings by a subjective evaluation.

One of the fundamental teachings of psycho-analysis is that reactions to situations in adult life are moulded and formed on the model of a previous infantile trauma. All the experiences of later life are merely pale shadows and replicas of the original situations. What, then, is there in the female child's experience that should cause her to mistrust and lack confidence in the reality of the objective world?

Freud, in a recent publication (10) on female sexuality, has emphasized the

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importance in the female of the pre-Œdipal phase. During that period, which lasts to the age of four or five, the little girl, just like her little brother, takes the mother as love-object. But while for the boy the mother remains the principal love-object right through the Œdipus phase, and there is no difficulty in transferring any ambivalent feeling of hostility upon the father, for the little girl the mechanism is totally different. With the arousal of the Œdipus complex she not only transfers her libidinous aims from the mother to the father, but the former love feeling is replaced by an emotion of hostility towards a hated rival. The motives brought to light by psycho-analysis to explain this turning away from the mother are that she neglected to provide the little girl with a penis; that she did not feed her enough; that she compelled her to share her mother's love with others; that she never fulfilled all the expectations of the child's love, and that she first excited and then forbade her daughter's own sexual activity. Whatever the reason, the significant fact is that at a certain stage in the little girl's life it is forced in upon her consciousness that she has been deceived in her object-love; she finds herself hating where she had formerly only adored.

Such a dramatic upheaval, requiring a complete reversal of former evaluations, would colour all subsequent reactions, and account for much that is distinctive in female psychology. "Things are not what they seem"—"I have been deceived,"—"I have loved where I should have hated"; such are the impressions induced by this experience. From then onwards her attitude is characterized, not by ambivalence, but by mistrust of the object: it may not be what it appears. And if at any time psychic disintegration occurs, it will be the object and not the self that will be found to be at fault.

In the male who has had no cause to have his faith in objective reality shaken, the opposite will occur: in times of psychic distress he will look for anomalies within his own feelings towards the object. For in him ambivalence proper is a much more marked feature on account of the dual feeling towards the father. The latter is on one side hated as a rival and on the other idealized as a pattern, and largely responsible for super-ego formation. Upon the mechanism employed to minimize, at least, the effect of this ambivalent attitude psychic integration and subsequent character-formation are mainly dependent (11). But whatever the compensatory process, ambivalence, with its resultant feeling of subjective disharmony, remains the weak point in the male psychic structure.

In the female, on the contrary, mistrust of object evaluation is the vulnerable point, and it is this consideration which is believed to afford an explanation as to why syndromes of false and non-recognition should only occur in women. The female from infancy onward has had her faith in her object-love shattered. The mother being proved false in the beginning, all subsequent love-objects carry the same pattern. People are not what they seem; deception has

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occurred before and may occur again. The psychotic woman, rather than doubt the genuineness of her own feelings, decomposes the object and postulates the existence of doubles.

My thanks are due to Dr. Bedford for permission to publish case-histories.

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THE SERO-DIAGNOSIS OF SYPHILIS IN MENTAL HOSPITAL PRACTICE.

(SECOND REPORT.)

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DURING the last nine months of 1931 a series of 175 cases were tested for syphilis by means of several reactions, and the results were reported in this journal in January, 1932. During the next nine months the work was continued and considerably extended, and we shall here give the further results thus obtained, together with a statistical expression of the findings of both periods combined.

The cases in the second series number 265, of which 159 had their cerebro-spinal fluids examined as well as their sera, and they have been classed into the same seven groups as were used before (see first report). In order to facilitate reference, the cases have been numbered so as to follow on after the first series—a procedure that has also been applied to the additional references to papers and articles listed at the end of this report.

The original Sachs-Georgi test was discontinued at the end of last year, but the modified (or B.W.) Sachs-Georgi, the Sachs-Witebsky and the Wassermann were retained. The Sachs-Witebsky has been extended to include a micro-method of reading results. The micro-M.K.R. and the macro-M.K.R. were continued for a time, but eventually dropped in favour of the new micro-M.K.R. II and macro-M.K.R. II. In addition the standard macro-M.K.R. and -M.K.R. II have been read by a microscopic method, giving rise to what we have here termed the " indirect " micro-M.K.R. to distinguish it from the direct micro-M.K.R. done from finger-blood. The original centrifuge method, or M.K.R.Z., recently described by Dr. Meinicke, has been used, and a modification of this has been devised by one of us (J. E. N.) and extensively applied. Finally, the macro-M.K.R. II, the direct and indirect micro-M.K.R. II and the modified M.K.R.Z. have all been repeated with the special " strong " extract now on the market, and the results reported separately from those obtained by using the ordinary antigen.

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The Kahn test in its routine form has been introduced, but the " presumptive " test was not found possible, owing to the difficulty of obtaining the antigen.

Most cases have had the Muller reactions applied, these being the standard M.B.R. II, the slow method with smaller quantities of serum for delayed readings (here called the " M.B.R. slow ") and the centrifuge (M.B.R.Z.) method. Two micro-techniques (direct and indirect) have been devised and tried on numerous cases.

Techniques and Comments.

Meinicke.

Macro-M.K.R.

Blood and cerebro-spinal fluid.—See first report.

Macro-M.K.R. II and Macro-M.K.R. II Str.

Blood.—10 c.c. of a 3·5% saline and 10 c.c. of a 0·01% solution of sod. carb. in 3·5% saline are separately heated in a water-bath at 56° C. for 10 minutes, while 1 c.c. of the extract (" standard " or " strong " as the case may be) is similarly heated in each of two test-tubes. The antigen tubes are then mixed with the others in pairs, the mixtures being replaced in the water-bath to ripen for 2 minutes. 0·5 c.c. of the *saline* antigen-dilution is then added to a small test-tube containing 0·2 c.c. of uninactivated serum. 0·5 c.c. of the *soda-salt* antigen dilution is added to 0·1 c.c. of uninactivated serum in another small test-tube. The test is read as usual as a clarification reaction after standing 18 to 24 hours at room temperature.

Cerebro-spinal fluid.—Same technique as for blood.

Indirect Micro-M.K.R. II and -M.K.R. II Str.

Blood.—After completing the macro-test, a platinum loopful is taken from each of the tubes and a hanging-drop preparation is made. The slides stand at room temperature for 1 to 2 hours, and then are examined for clumping in the usual way.

Cerebro-spinal fluid.—Same technique as for blood.

Comments.—The macro-test described above has the advantage of being simpler than the old M.K.R. In this test it does not appear to be so necessary to distinguish between complete and incomplete clarification as it was with the old method, but it must be admitted that the results are a little less definite. It has been found, however, that by using the 0·01% soda-salt solution for *both* dilutions, the readings are rather more definite, without giving rise to any more errors. This has become the usual procedure here, with the additional advantage that only one antigen dilution need be prepared instead of two. A noticeable fact was that the final clarification always tended to be more marked—if it occurred at all—in the second tube, the first tube often remaining slightly turbid.

Using the strong extract, however, the results are much more easily read; this may be largely due to the strong antigen being coloured blue, so that clarification is accompanied by decolorization.

The indirect micro-test has the advantage of yielding results in a short time. Incidentally, one obtains many less " doubtfuls " with the indirect micro-test than with the direct.

Direct Micro-M.K.R.

Blood and cerebro-spinal fluid.—See first report.

Direct Micro-M.K.R. II and -M.K.R. II Str.

Blood.—A saline antigen dilution and a soda-salt antigen dilution are prepared as for the macro-test. One small loopful of the uninactivated serum is mixed with

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a larger loopful (4 mm. diam.) of the *saline* antigen-dilution, a hanging-drop preparation is made and the result read after 1 to 2 hours. Another hanging-drop preparation is made, using the *soda-salt* antigen dilution and replacing the larger loop by a still larger one (5½ mm. diam.).

Cerebro-spinal fluid.—Same technique as for blood.

Comments.—This new technique has the advantage that it is done in two dilutions and not in one, as in the old micro-test. This diminishes the very real risk of missing strong cases, because even if the reaction were held up in the ordinary dilution it would become apparent in the weaker dilution.

Here, again, the strong extract has the characteristic of being more clear in its results; in a negative case the antigen is barely visible at all, but any clumping whatsoever gives a very sharp and distinct picture. In strong cases, however, doubtful readings may be obtained, while the ordinary extract gives undoubted positives.

As regards cerebro-spinal fluid, we have recently discontinued doing the test in *two* dilutions, for we have never come across a fluid that is so strongly positive as to cause the reaction to be held up in the first dilution.

Original M.K.R.Z.

Blood.—The test is put up like the macro-M.K.R. II, but in one dilution only. Instead of letting the tubes stand, they are at once centrifuged at 2,000 to 2,500 revs. for 5 minutes. The tubes are then drained and stood upside down. In a positive case a deposit remains at the bottom of the tube, that has sharp edges and does not run out. The deposit in a negative case has blurred contours, and leads to greyish streaks of precipitate running down the sides of the tube.

Cerebro-spinal fluid.—Same technique as for blood.

Modified M.K.R.Z. and Modified M.K.R.Z. Str.

Blood.—The test is put up as for the original M.K.R.Z., but after centrifuging the tube is not inverted; it is shaken up just hard enough to resuspend the precipitate, after which it is allowed to stand for 3 to 4 hours. If the *slightest* clearing appears in that time the case is positive, a strong one giving a marked clarification. A negative case remains opaque. The clearing is best observed against the light of an electric bulb at close quarters.

Cerebro-spinal fluid.—Same technique as for blood.

Comments.—The original M.K.R.Z. for blood is very sensitive, but it does not allow of graduated readings; almost any positive gives as marked a result as a very strong case. For cerebro-spinal fluid it is very unsatisfactory, and it is on this account that a modified test was devised. The modified M.K.R.Z. may not be quite as good for blood as the original technique, but it certainly answers better for fluid. Further, it is possible to distinguish between a weak and a strong positive. Ordinary cases give slightly more clear-cut results with the strong than with the ordinary extract, but strangely enough very weak cases that give a "doubtful" with the standard antigen may give a negative with the strong. With the strong extract it is often possible to guess the final result directly after centrifuging, as negative cases give little or no clearing, but with the standard extract negative cases often clear at first, although they may not do so after resuspension.*

MULLER.

M.B.R. II.

Blood.—Place 2 c.c. of extract (supplied with full instructions by Schering-Kahlbaum, Berlin) in a test-tube, and *in three seconds* deliver down the sides of the

* The importance of pH in these tests, as in other flocculation tests, is to be borne well in mind, as it has been stated (195) that with a pH of 8 all the results are negative, and with a pH of 5 they are all positive. That is why it is important to cover the corks of antigen bottles with tinfoil, so as to prevent contamination with tannic acid. See also (180, 181).

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test-tube 3 c.c. of a 0·03% solution of sodium carbonate in 0·9% saline, *at 17° C.*, and invert tube once ; allow to stand for 12 minutes. Then place in a small beaker, and from another beaker add 25 c.c. of the soda-salt solution ; the antigen dilution is now ready for use. Into two small test-tubes (10 or 12 mm. × 70 mm.) place 0·35 and 0·25 c.c. respectively of inactivated serum. Add 0·5 c.c. of antigen-dilution to each and shake. Now place tubes in a water-bath at 56° C. for 15 minutes. Remove from bath and allow to stand, reading results after *one* and *four* hours. A persisting uniformly clear colloidal appearance with typical " sheen " indicates a negative result. A fine floccular suspension is a " doubtful " result. An early flocculation, later giving rise to definite fluffy " ball-formations ", means a weak positive, and early ball-formations later aggregating into one large ball indicate a strong positive.

Cerebro-spinal fluid.—The antigen-dilution is prepared as before. Place 0·6 c.c. of inactivated fluid in a small test-tube and add 0·3 c.c. of antigen-dilution. Heat in a water-bath at 56° C. for 10 minutes. Allow to stand, and read results after a few hours *and again next day*.

Comments.—At the Third League of Nations Conference at Montevideo the amount of serum used was 0·45 c.c., but the quantities mentioned above have been found quite satisfactory. In any case there seems little advantage in the second tube with only 0·25 c.c. of serum, and in our experience there is evidence that the reaction could safely be run as a one-tube test.

It has been stated (163) that the test for serum can be read again next day, thereby increasing sensitivity without, however, impairing specificity. With this we cannot agree ; we have had several " doubtful " results appearing on the second day in cases that were non-syphilitic, and we have had a few definitely false positives produced this way. This seems particularly liable to occur when the temperature falls rapidly during the night. Yet, with care, a second-day reading may be of slight use by proceeding this way : If positives appear overnight, one should shake the tubes slightly, just enough to re-suspend the " ball-formation " and restore the sheen, and allow to stand again for 2 or 3 hours. With but few exceptions it will be found that all true positives will re-form ball-complexes in that time, whereas the negative cases will not do so.

In any case it seems wise to allow oneself a little latitude in reading this test, for owing perhaps to the difficulty of performing the first mixing of antigen in exactly 3 seconds, coupled with the possibility of slight variations in the temperature at the time of mixing, one does find mild fluctuations in the time required for different batches of antigen to act. It is a very necessary thing to have, in each series of sera, one or two known negatives, and from the behaviour of these the characteristics of each antigen-dilution can to some extent be recognized in time. Thus, when reading and re-reading results several times up to next day, one should cease taking note of weak positives once changes are beginning to appear in known negatives ; in other words, one's final readings are those immediately preceding those which include for the first time " doubtful " results in negative controls.

M.B.R. Slow.

Blood.—This is performed exactly as the standard M.B.R. II, but using only one tube, with 0·15 c.c. of serum. Results are read after 18 to 24 hours. We found, however, that this test is better put up in slightly smaller tubes (7 mm. × 70 mm.).

Cerebro-spinal fluid.—The test is not, as a rule, advocated for fluid, if only because the ordinary M.B.R. II *has* to be read again the next day, but just as a matter of interest we have tried this test on several fluids, using 0·3 c.c. of fluid and reading results after 24 to 30 hours.

Comments.—Any positive case of marked or even average strength will show a good ball-formation nearly as rapidly with this test as with the standard M.B.R. II,

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but weak cases are not as certain of giving positive results, and often remain at the " doubtful " stage. As regards cerebro-spinal fluid, the test seems valueless.

M.B.R.Z.

Blood.—Proceed as for the M.B.R. II, but using only one quantity of serum, namely, 0·35 c.c. After taking the tubes out of the water-bath centrifuge at once for 5 to 10 minutes at 2,000 to 2,500 revs. The test is then read at once and again after 3 hours. The strong positives will show definite " clotting ", *i.e.*, irregular masses that appear more dense and compact than the usual " fluffy " ball-formations, and the weak positives will show a finer, floccular precipitate that gives rise to ball-complexes later (after 3 hours).

Cerebro-spinal fluid.—Proceed as for the M.B.R. II, but centrifuging as above. Positives will give the typical clotting (very liable to form a flattened mass at the bottom of the tube), with clearing of the fluid and loss of sheen.

Comments.—The main advantage here seems to be the early recognition of strong positives, but weak cases will still have to stand for results to appear, at least with serum.

With cerebro-spinal fluid further standing seems to be of less value, as our final results have nearly always agreed with those obtained directly after centrifuging. Care must be used not to miss the few fine clots that may yet indicate a positive result, as later aggregation into larger masses does not so readily occur in fluid.

Indirect Micro-M.B.R.

Blood.—After the completion of the M.B.R. II take a loopful of the mixture and make a hanging-drop preparation ; allow to stand for 3 hours and read under a low power. In a negative case the antigen appears as fine, evenly disseminated needles. In a doubtful case there is a slight tendency for these needles to adhere together, and in a positive case they form small masses that, in a strong case, arrange themselves in a kind of fluffy network not unlike teased wool.

Cerebro-spinal fluid.—Same technique as for blood.

Direct Micro-M.B.R.

Blood.—Prepare the antigen-dilution as usual. Heat it in a water-bath at 56 to 58° C. for 5 to 10 minutes. Take one small loopful of inactivated serum (as for the *micro-M.K.R.*) and mix it with a slightly larger loopful of antigen-dilution (4 mm.). Make a hanging-drop preparation and read after 3 hours.

Cerebro-spinal fluid.—Same technique as for blood.

Comments.—The results are slightly easier to read in the case of the direct method. The test has been tried in two dilutions, but the antigen-dilution is not viscous enough to hold well in the largest loops (5½ mm. diam.), so that the 4 mm. loops were the ones that had to be relied upon. Further comments need not be made at this juncture, as these techniques are only just emerging from the experimental stage, and it is only for the sake of completeness that they are included here. At some future date it may be possible to say more about them, and to discuss in detail the results on a larger number of cases than we have as yet tested.

KAHN.

Kahn Routine.

Blood.—Place 1 c.c. of antigen (Parke Davis & Co.) in a flat-based antigen-dilution tube, 5·5 cm. × 1·5 cm. In a similar tube place a given amount of 0·9% saline (amount stated on the antigen bottle). The saline is poured into the antigen, and the mixture rapidly poured from one tube to the other and back again twelve times. Allow to stand for 10 minutes, when the antigen is

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ready for use. The test must be completed within 30 minutes of this mixing. To the bottom of each of three tubes (7·5 cm. × 1 cm.) pipette 0·05, 0·025 and 0·0125 c.c. respectively of antigen suspension, and add to each tube 0·15 c.c. of inactivated serum. Shake for 3 minutes at 275 oscillations per minute. Then to the first tube (0·05 of antigen) add 1 c.c. of 0·9% saline, and 0·5 c.c. to the other two tubes. Shake for 30 seconds, and read at once. The tubes are viewed in a concave mirror (such as a microscope's) and examined for a precipitate. Some recommend reading the results under a low power (172), but we have not found the method of much value. According to the heaviness of the precipitate present, each tube is rated from " one plus " to " four plus ", the final result consisting of an average of the readings of the three tubes.

Cerebro-spinal fluid.—The antigen suspension is prepared as for blood, except that the amount of saline to be added is different. Centrifuge the fluid to remove cells and foreign matter. To 1·5 c.c. of fluid add 1·5 c.c. of saturated pure ammonium sulphate solution. Heat in a water-bath at 56° C. for 15 minutes, then centrifuge for 15 minutes. Remove the supernatant fluid with a capillary pipette, and add 0·15 c.c. of saline to redissolve the precipitate (globulins). Add 0·15 c.c. of this solution to a test-tube, to the bottom of which 0·01 c.c. of the antigen suspension has previously been delivered. Shake for 3 minutes and add 0·5 c.c. of saline. Shake again and read. The test is best done in duplicated tubes. It is recommended by Kahn that weak positive readings (one plus*) and " doubtfuls " be returned as negatives.

As a check for proper antigen mixing, 0·05 c.c. of antigen suspension should be placed in a tube and 2 c.c. of saline added; after shaking for 15 seconds the mixture should appear opalescent. It is particularly important that all glassware should be absolutely clean chemically.

Comments.—Although this makes the test a little more awkward, it is possible, by reducing all the amounts correspondingly, to use less than 0·15 c.c. of serum for each tube. For cerebro-spinal fluid, the method described above has been used in every case, but for averagely strong cases it is not necessary to precipitate and redissolve the globulins; it is only for very weak cases that this procedure is required.

In accordance with the principle mentioned earlier we have returned the " one plus " and the " doubtful " readings obtained with spinal fluid as negatives, but from our experience we feel very much inclined to believe that the " one plus " might be returned as a weak positive, or at least as a doubtful, without nevertheless leading to any unspecific results, as all our "one plus " and " doubtful " readings (which we returned as negatives) occurred in known syphilitic fluids.

Whether for blood or for fluid, the reading of the test seems easier and more clear-cut after 1 hour from completion, and it might be permissible to advocate a second reading for increasing sensitivity.

Sachs-Georgi.

Original Sachs-Georgi.

Blood and spinal fluid.—See first report.

Modified Sachs-Georgi.

Blood and spinal fluid.—See first report.

Sachs-Witebsky.

Ordinary Sachs-Witebsky.

Blood and spinal fluid.—See first report.

* In reducing to League of Nations Standard. For blood, see later.

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Indirect Micro-Sachs-Witebsky.

Blood.—Proceed as for the ordinary test, but as soon as the antigen has been added to the serum, take a loopful of the mixture and make a hanging-drop preparation and examine after 30 minutes, under a low power. The antigen is almost invisible in a negative, but definite clumping will be observed in positives.

Cerebro-spinal fluid.—Same technique as for blood.

Direct Micro-Sachs-Witebsky.

Blood.—Prepare the antigen suspension as for the ordinary test. Mix equal amounts of inactivated serum and antigen suspension on a glass slide, then make a hanging-drop preparation and examine for clumping after 15 minutes.

Cerebro-spinal fluid.—Same technique as for blood.

Comments.—It would seem that the antigen does not keep for very long, and it is quite possible that the comparative poorness of the results obtained here with this test may, in part, have been due to some cases having been tested with too old a sample of antigen.

As regards the direct micro-test, the results of mixing on a slide have been very disappointing. An attempt was made to mix by means of platinum loops, but the antigen does not appear suitable for such a method. The test was done on some 40 cases, but was soon discontinued.

The indirect micro-test is the only micro-method that was retained, but even its results were not very satisfactory, and were worse with fluid than with blood. To see whether some of the "doubtfuls" in negative cases could be eliminated, the test was tried by making a hanging-drop preparation after adding the final 1 c.c. of saline, instead of before; this was done on some 60 or 70 cases. The method worked with strong positives, but weakly positive cases were missed.

WASSERMANN.

Wassermann (Manchester University Public Health Laboratory).

Blood and Cerebro-spinal fluid.—See first report.

GROUP RESULTS.

In the tables that follow only those cases have been set out in full in which definite disagreements occurred. The complete agreements have merely been enumerated at the end of each table. The fluids have been given separately, but are numbered to correspond with the sera.

Before discussing the group results in detail we would again emphasize that, owing to the unreliability and scantiness of histories in mental cases, no patient was included in the positive groups, notwithstanding a syphilitic history, unless he showed at least one positive result in his serum—several, if he had no such history. That is why our final statistics have been worked out on a basis of positive and negative cases rather than syphilitics and non-syphilitics.

As to the large number of partial (plus-minus reactions) and complete disagreements noted in each group, this is chiefly explainable by the large number of tests done concurrently. Three other factors, however, deserve to be mentioned. Firstly, a large proportion of our cases were specially picked as likely to give conflicting results; the treated paralytics alone number (in the

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whole series) over 100, and they account for the majority of the discrepancies found, at least as regards spinal fluid. Secondly, the fact of including several techniques that might be termed experimental (such as the two micro-M.B.R. tests, the three M.K.R.Z. reactions and the micro-Sachs-Witebsky) has led to many faulty results that swell the total number of disagreements.

Finally, there is the important question of " doubtful " reactions, of which we show a large number. It might admittedly have been possible to limit their number somewhat, by reading our results more boldly, but if we have not done so it has been in part because we were still inexperienced in the reading of some of these tests, and in part also because too definite a reading of a reaction that shows any unusual or confusing appearance does away with any record of how often each kind of test may offer some slight difficulty in reading. It is wise, in an investigation of this sort, to be able to judge (from the number of doubtfuls recorded) to what extent one test is superior to another in the clarity and definiteness of its results.

Blood.

Group A.—Seventy-one non-syphilitics. Of these, 27 showed complete agreement, 23 partial agreement (one or more " plus-minus " reactions), and 21 disagreements.

A number of false positives occurred, most marked amongst the M.K.R. and M.B.R. reactions. Case No. 34 showed no evidence in support of the positive Wassermann ; the M.K.R. tests were repeated and were negative. No. 38 had the M.K.R. repeated and it was negative. No. 37 had the Wassermann repeated with negative result. No. 40 showed no clinical symptoms of any kind. No. 42 had the direct micro-M.K.R. repeated and it was again positive ; this case is serologically doubtful, but has been classed as negative owing to an exhaustive but unfruitful search for history and symptoms. The same applies to No. 43. No. 58 was very definitely not a syphilitic, but he had active pulmonary tuberculosis ; he was re-examined later, after his pyrexia had subsided, as case No. 97. No. 64 also had active tuberculosis. In the case of No. 71 there is just a remote possibility that she might be a congenital syphilitic. Nos. 79 and 80 are clearly not syphilitic. No. 97, see No. 58. No. 99 gives rise to much doubt concerning the correctness of classification.

Group B.—Thirty-three syphilitic or clinically doubtful cases, with negative sera. Of these, 10 showed complete agreement, 14 partial agreement, and 9 disagreements.

No. 32, test repeated and became negative. In both cases No. 42 and No. 54 there is room for doubt, as there is a possibility of congenital syphilis. No. 61 gives a history of gonorrhœa, but not of syphilis. Nos. 31, 32, 37, 43, 49 and 56 gave a history of syphilis.

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TABLE I.—*Group A : Partial and Complete Disagreements Occurring in Non-syphilitic Cases.*

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).												Muller (M.B.R. II and M.B.R. Z.).					K.	Sachs-Georgi and Sachs-Witebsky.				W.	Remarks.
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str.	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.) Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	
31	J. L—	—	..	..	—	..	..	±	—	..	..	..	..	..	..	..	..	..	—	..	±	—	..	—	..
32	E. R—	++	..	..	++	..	..	++	..	..	..	..	..	..	..	..	..	..	—	..	—	—	..	—	..
33	M. H—	—	..	..	—	..	..	±	±	—	..	..	..	..	..	..	..	..	—	..	—	—	..	—	..
34	E. R—	—	..	..	—	..	..	—	—	—	..	..	..	..	..	..	..	..	—	..	—	—	..	1/3	..
35	J. W—	—	..	..	—	..	..	—	—	..	..	..	..	±	..	..	..	..	—	..	—	—	..	—	..
37	J. D—	±	..	..	±	..	..	+	+	+	..	..	..	—	..	—	..	..	—	..	—	—	..	1/6*	.. * Repeated : negative.
38	A. K—	—	—	..	—	—	..	±	—	..	±	—	..	—	..	—	..	..	—	..	—	—	..	—	..
39	W. W—	—	—	..	—	—	..	—	—	..	±	±	..	—	..	—	..	..	—	..	—	—	..	—	..
40	J. L—	+	—	..	+	—	..	±	+	++	—	+	..	±	..	±	..	..	—	..	—	—	..	—	..
41	J. Y—	—	—	..	±	—	..	—	—	..	—	—	..	—	..	—	..	..	—	..	—	—	..	—	..
42	J. H—	++	++	..	++	++	..	—	—	—	—	—	..	+	..	+	..	..	—	..	—	—	..	—	..
43	J. K—	++	++	..	+	+	..	±	+	++	—	—	..	±	..	+	..	..	—	..	—	—	..	—	..
47	F. H—	..	±	±	..	±	—	±	±	—	—	—	..	—	..	—	..	..	—	..	—	—	..	—	..
49	J. W—	..	—	—	..	—	—	—	+	..	..	—	..	—	..	—	..	..	—	..	—	—	..	—	..
53	W. N—	—	—	—	—	—	—	+	±	..	..	—	..	—	..	—	—	—	—	..	—	—	..	—	..
58	J. H—	—	+	±	—	±	±	—	—	—	..	±	..	+	—	+	—	+	—	..	—	—	+	—	Active TB.
59	H. R—	—	—	—	—	—	—	—	—	—	..	—	..	—	—	—	—	+	—	..	—	—	—	—	..
60	S. R—	—	—	—	—	—	—	—	—	—	..	—	..	±	±	±	±	±	—	..	±	—	±	—	..
63	J. C—	—	—	—	—	±	—	+	—	—	+	±	+	±	..	±	±	±	—	..	—	—	—	—	..
64	M. V—	..	++	++	..	+	±	—	±	—	—	—	—	—	..	—	+	—	—	..	—	—	—	—	Active TB.

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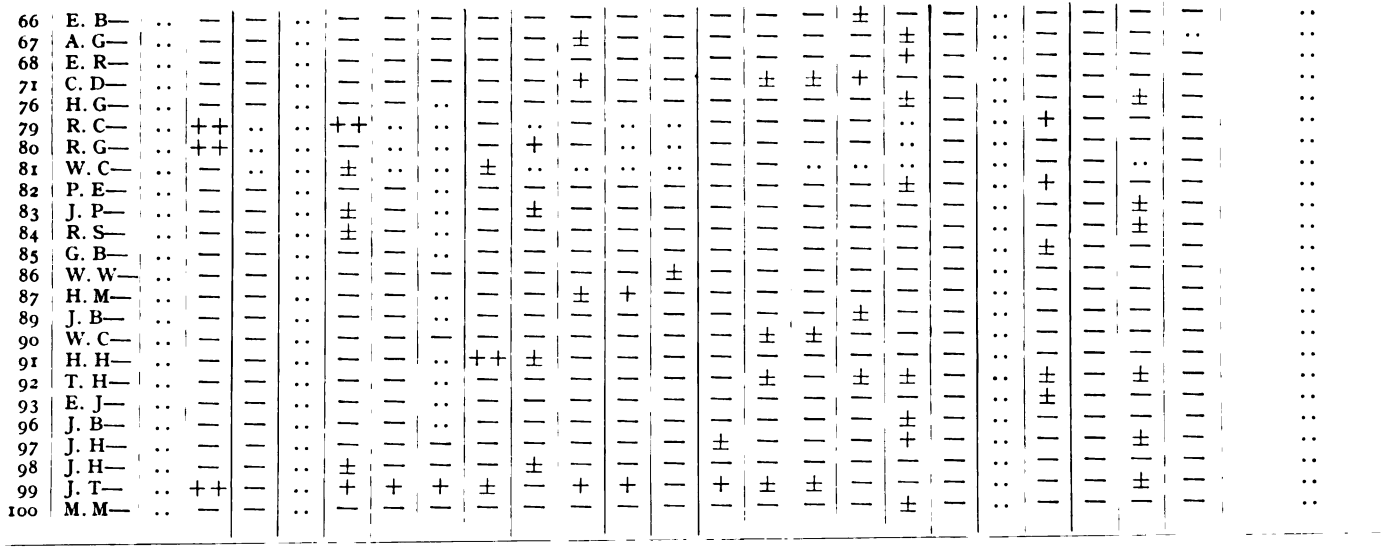

Cases Nos. 36, 44, 45, 46, 48, 50, 51, 52, 54, 55, 56, 57, 61, 62, 65, 69, 70, 72, 73, 74, 75, 77, 78, 88, 94, 95 and 101 showed complete agreement.

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TABLE II.—*Group B : Partial and Complete Disagreements Occurring in Syphilitic and Clinically Doubtful Cases with Negative Sera.*

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).												Muller (M.B.R. II and M.B.R. Z.).					K.	Sachs-Georgi and Sachs-Witebsky.				W.	Remarks.
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str.	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.) Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	
32	W. H—	—	—	..	—	—	..	—	—	—	—	+	—	—	..	—	..	..	—	..	—	—	..	—	History of syphilis.
33	E. S—	—	—	..	—	—	..	—	—	..	—	±	..	—	..	±	..	..	—	..	—	—	..	—	Congenital syphilis.
37	J. K—	—	±	—	—	±	—	—	—	—	..	—	..	—	—	—	—	—	—	..	—	—	±	—	History of syphilis.
42	J. M—	..	—	—	..	—	—	—	—	—	—	±	—	—	—	—	+	±	—	..	+	—	±	—	..
43	E. H—	..	—	—	..	—	—	..	—	—	—	—	—	—	—	—	—	—	—	..	—	—	±	—	History of syphilis in 1928.
44	E. B—	..	—	—	..	—	—	—	—	—	—	—	—	—	—	—	±	±	—	..	±	—	—	—	..
45	J. T—	..	—	—	..	—	—	..	—	—	—	—	—	—	±	—	—	±	—	..	—	—	—	—	..
47	A. L—	..	—	—	..	—	—	..	—	—	—	—	—	—	—	—	—	±	—	..	—	—	—	—	..
48	W. O—	..	—	—	..	±	—	..	—	—	—	—	±	—	—	—	—	—	—	..	—	—	—	—	..
49	C. G—	..	—	—	..	—	—	..	—	—	—	..	..	—	—	—	±	±	—	..	—	—	—	..	History of syphilis in 1917.
51	G. G—	..	±	—	..	—	—	..	—	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	..
52	L. T—	..	—	—	..	—	—	..	—	—	—	—	—	—	—	—	+	—	—	..	—	—	—	—	..
53	J. W—	..	—	—	..	—	—	..	—	—	—	—	—	±	—	±	±	±	—	..	—	—	±	—	..
54	M. R—	..	—	—	..	±	—	+	±	—	±	—	—	—	—	—	—	—	—	..	—	—	—	—	..
55	E. G—	..	—	—	..	±	±	—	—	±	—	—	—	—	—	—	—	—	—	..	—	—	—	—	..
56	E. H—	..	—	—	..	—	—	..	—	—	—	—	—	—	—	—	—	+	—	..	—	—	—	—	History of syphilis in 1892.
57	J. K—	..	++	—	..	+	—	..	+	±	++	++	—	±	—	—	—	±	—	..	—	—	±	—	..
58	T. B—	..	—	—	..	—	±	..	—	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	..
59	L. F—	..	—	—	..	—	—	—	—	+	—	—	—	—	—	—	—	—	—	..	—	—	—	—	..
60	L. K—	..	—	—	..	—	—	—	±	—	—	—	—	—	—	—	—	+	—	..	—	—	±	—	..
61	J. B—	..	++	++	..	±	±	..	±	—	±	—	±	—	—	—	—	±	—	..	—	—	—	—	..
62	H. H—	..	—	—	..	—	—	..	—	—	—	—	—	—	—	—	—	—	—	..	—	—	±	—	..
63	H. L—	..	—	—	..	—	—	..	—	—	—	—	—	—	—	—	±	—	—	..	—	—	—	—	..

Cases Nos. 34, 34, 45, 49.

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TABLE III.—*Group C: Partial and Complete Disagreements Occurring ... ...ve Syphi... ..., excluding Gen...al Paralytics.*

(*Sera.*)

[BLOOD.

33	J. D—	++	..	..	++	..	..	++	++	..	..	..	..	..	..	..	..	..	..	..	±	±	..	—	Syphilis in India.
35	J. I—	++	..	..	+	..	..	±	—	..	..	..	..	..	..	..	..	..	..	..	—	—	..	±	Meningo-vascular syphilis.
36	J. T—	±	..	..	+	..	..	+	+	++	..	..	..	..	..	..	..	..	..	..	—	—	..	—	History of syphilis.
38	L. C—	±	..	..	+	..	..	+	..	..	..	..	..	..	..	..	..	..	+	..	+	±	..	..	..
40	E. H—	±	..	..	+	..	..	++	++	++	..	..	..	..	..	..	..	..	—	..	±	±	..	1/10	..
43	P. B—	±	..	..	+	..	..	++	++	..	..	..	..	+	..	++	..	..	++	..	++	++	..	1/45	..
45	M. Y—	++	..	..	++	..	..	++	..	..	..	..	..	..	..	..	..	..	+	..	..	—	..	1/6	..
46	D. A—	—	±	..	—	+	..	+	+	..	—	—	..	++	..	++	..	..	+	..	+	+	..	1/45	..
47	J. F—	++	++	..	++	++	..	++	++	..	+	+	..	++	..	++	..	..	+	..	+	±	..	1/5	Meningo-vascular syphilis.
48	J. M—	++	++	..	++	++	..	++	++	..	—	+	..	+	..	+	..	..	++	..	+	—	..	—	..
49	T. A—	+	+	..	++	+	..	++	++	..	±	++	..	+	..	++	..	..	++	..	++	++	..	1/45	..
50	J. M—	+	+	..	+	+	..	±	+	++	+	±	..	+	..	++	..	..	++	..	++	+	..	1/45	..
51	W. M—	++	++	..	+	+	..	±	++	..	+	++	..	++	..	++	..	..	+	..	+	++	..	—	..
54	T. S—	++	+	..	+	±	..	+	±	..	+	+	..	++	..	++	..	..	±	..	±	±	..	±	Syphilis in 1902.
55	W. W—	++	++	..	++	++	..	±*	++	..	+	±	..	++	..	++	..	..	++	..	±	—	..	1/5	* Positive.
56	R. Y—	±	—	..	—	—	..	++	++	..	+	+	..	++	..	++	..	..	++	..	++	++	..	1/45	..
59	C. G—	+	±	..	+	+	..	+	+	..	..	++	..	—	..	—	..	..	±	..	—	—	..	—	Congenital syphilis.
60	D. M—	++	++	..	++	++	..	±	+	++	—	—	..	±	..	+	..	..	—	..	—	—	..	—	History of syphilis.
61	G. M—	++	++	..	++	++	..	++	++	..	..	++	..	+	..	+	..	..	+	..	—	—	..	—	..
64	W. H—	..	++	++	..	+	+	++	++	..	..	++	..	+	..	+	++	+	++	..	±	—	..	1/3	..
66	G. B—	++	++	++	++	+	++	+	+	++	+	++	++	+	+	+	±	+	+	..	+	±	±	1/2	Tabes.
67	F. H—	..	++	++	..	++	++	+	++	++	+	++	+	+	+	+	+	±	+	..	±	—	±	—	..
69	S. C—	..	+	..	..	+	..	+	+	+	..	+	..	±	—	±	±	±	±	..	+	—	—	..	Meningo-vascular syphilis.
70	M. R—	..	±	±	..	+	++	—	++	++	+	±	—	++	+	++	++	++	++	..	++	++	++	1/45	..
71	G. D—	..	++	++	..	+	+	..	++	++	++	+	++	++	++	++	+	+	++	..	++	++	+	—	..
73	D. B—	..	++	++	..	+	+	+	++	++	+	+	+	+	±	+	—	—	++	..	±	+	+	±	Congenital syphilis.
74	E. C—	..	++	++	..	++	++	++	++	++	+	++	+	++	+	++	±	++	++	..	+	++	++	1/8	..
75	E. O—	..	++	++	..	+	++	++	+	++	+	+	+	+	+	+	±	±	±	..	+	—	—	—	..
76	J. G—	..	+	±	..	±	—	..	±	—	—	±	++	±	+	±	±	—	—	..	+	±	+	—	..
77	M. P—	..	+	+	..	++	+	+	+	+	++	++	±	+	±	+	+	+	—	..	+	—	—	—	..
78	M. T—	..	++	++	..	++	+	±	++	++	++	±	±	++	++	++	++	++	++	..	+	++	++	1/40	..
80	A. M—	..	++	++	..	++	++	++	++	++	++	++	+	±	+	—	—	++	++	..	+	++	+	1/45	..
81	E. M—	..	++	+	..	++	+	±	++	++	++	++	+	+	++	+	±	++	+	..	+	—	—	±	..
83	E. W—	..	++	++	..	+	+	+	+	+	+	+	+	++	+	++	+	±	++	..	—	—	±	1/5	..
84	W. H—	..	+	±	..	++	+	..	+	++	+	++	+	+	+	±	—	++	+	..	+	—	—	—	Congenital syphilis.

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TABLE III.—*Group C: Partial and Complete Disagreements Occurring in Positive Syphilitics, excluding General Paralytics.* (*Sera.*)—continued. [BLOOD.

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).												Muller (M.B.R. II and M.B.R. Z.).					K.	Sachs-Georgi and Sachs-Witebsky.				W.	Remarks.
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str.	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.) Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	
86	G. S—	..	++	++	..	++	++	++	..	++	++	..	++	+	+	++	±	++	+	..	++	±	—	1/30	..
87	H. S—	..	++	++	..	++	++	++	..	++	++	..	++	+	++	++	++	++	++	..	±	++	+	1/30	..
91	J. W—	..	++	++	..	+	++	..	+	++	++	+	++	++	++	++	+	+	++	..	++	—	+	1/45	Meningo-vascular syphilis.
92	M. H—	..	++	++	..	++	++	..	+	++	++	++	++	++	++	++	++	+	++	..	++	—	—	1/30	Ditto.
97	H. D—	..	++	++	..	++	++	++	+	++	++	++	++	++	++	++	+	+	++	..	+	±	+	1/15	..
98	P. J—	..	++	++	..	+	+	..	+	+	±	+	++	—	+	±	—	±	++	..	+	±	—	1/10	..
99	J. G—	..	—	—	..	—	±	..	—	±	++	—	—	—	—	—	—	+	—	..	±	—	—	—	Congenital syphilis.
102	M. B—	..	++	++	..	++	+	+	+	++	++	+	++	++	++	++	±	++	++	..	+	++	+	1/30	..
103	M. H—	..	+	—	..	+	—	+	+	—	+	++	+	+	+	+	±	+	+	..	—	±	+	—	Congenital syphilis.
105	M. G—	..	++	++	..	+	++	++	++	+	++	++	++	±	±	+	—	++	+	..	++	±	±	—	..
107	A. M—	..	++	++	..	++	+	++	+	+	++	+	+	+	—	+	—	—	±	..	+	—	—	—	..
108	J. M—	..	++	±	..	+	+	+	++	+	+	±	+	+	±	+	—	+	—	..	+	±	—	—	History of syphilis.
109	D. R—	..	++	—	..	+	+	+	±	—	++	+	—	—	±	±	—	±	—	..	—	—	—	—	Ditto, 1916.
112	R. B—	..	++	++	..	+	+	++	++	+	++	++	+	+	++	++	±	+	±	..	+	—	—	—	..
113	S. N—	..	++	++	..	+	++	..	±	++	++	++	±	++	++	++	+	++	++	..	++	++	++	1/45	Tabes.
114	J. W—	..	+	±	..	+	+	+	+	+	++	++	±	+	+	+	—	±	±	..	—	±	—	±	..
116	G. N—	..	++	+	..	++	+	..	+	+	++	++	—	±	—	±	±	±	—	..	+	—	—	—	History of syphilis.
117	J. S—	..	+	±	..	+	+	..	+	+	++	++	±	+	±	+	—	—	±	..	±	—	—	—	Ditto.
119	J. W—	..	+	+	..	+	+	..	++	++	++	+	+	+	+	+	±	±	++	..	±	+	+	1/15	..
120	E. H—	..	++	+	..	+	+	..	+	+	++	+	±	+	+	+	±	+	+	..	±	+	+	—	..
121	M. P—	..	++	—	..	+	±	..	+	±	++	±	—	+	+	+	—	—	—	..	—	—	—	±	..

Cases Nos. 32, 34, 37, 39, 41, 42, 44, 52, 53, 57, 58, 62, 63, 65, 68, 72, 79, 82, 85, 88, 89, 90, 93, 94, 95, 96 100, 101, 104, 106, 110, 111, 115 and 118 showed complete agreement.

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TABLE IV.—*Group D: Partial and Complete Disagreements Occurring in Untreated Paralytics.* (*Sera.*) [BLOOD.

27	J. K—	++	..	..	+	..	..	+	++	..	..	..	..	—	..	++	..	..	++	..	+	++	..	1/5	..
28	J. L—	—	..	..	±	..	..	±	+	..	..	..	..	+	..	++	..	..	+	..	++	++	..	1/45	..
29	D. M—	++	++	..	++	++	..	±	++	..	+	++	..	++	..	++	..	..	++	..	++	+	..	1/20	..
30	T. D—	+	+	..	+	+	..	+	+	..	..	—	..	++	..	++	..	..	++	..	+	++	..	1/45	..
34	A. P—	..	±	++	..	++	++	..	++	..	..	±	..	++	..	++	..	..	++	..	++	++	..	1/45	..
37	R. H—	..	—	—	..	—	—	—	++	±	—	—	—	++	..	++	+	+	+	..	++	++	—	1/45	..
39	W. M—	..	++	++	..	++	++	..	++	++	++	—	+	+	+	+	+	+	++	..	+	+	+	1/15	..
40	H. B—	..	±	..	..	—	..	..	+	++	+	..	..	++	+	++	+	..	++	..	++	+	+	1/45	..
41	W. F—	..	—	—	..	—	—	..	++	++	+	±	—	++	++	++	++	++	++	..	++	++	—	1/45	..
42	H. P—	..	++	++	..	++	++	..	++	++	++	++	++	++	±	++	—	++	++	..	++	+	+	1/8	..
43	J. H—	..	—	++	..	++	++	..	++	++	++	—	±	++	++	++	+	—	++	..	—	++	+	1/45	..
45	W. J—	..	±	++	..	+	++	..	++	++	+	+	++	++	++	++	+	++	++	..	+	++	++	1/45	..
46	F. S—	..	++	++	..	++	+	..	+	++	++	±	+	++	+	++	+	++	++	..	++	++	+	1/15	..
48	A. J—	..	++	++	..	++	++	..	++	++	++	—	++	++	++	++	+	++	++	..	++	++	++	1/45	..
50	W. B—	..	+	+	..	+	++	..	+	++	++	—	—	++	++	++	+	+	++	..	++	++	+	1/45	..

Cases Nos. 31, 32, 33, 35, 36, 38, 44, 47 and 49 showed complete agreement.

TABLE V.—*Group E: Partial and Complete Disagreements Occurring in Treated Paralytics up to Nine Months after Malaria.* (*Sera.*) [BLOOD.

18	J. K—	..	+	±	..	+	+	..	+	++	++	±	±	+	+	+	+	+	++	..	++	±	—	—	..
19	G. L—	..	+	++	..	++	++	..	++	++	+	+	+	++	+	+	+	+	++	..	++	±	—	1/6	..
20	J. L—	..	++	++	..	++	++	..	+	++	±	±	+	++	++	++	+	+	++	..	++	++	++	1/45	..
22	R. C—	..	+	++	..	++	++	..	+	++	+	±	++	++	++	++	+	++	++	..	++	++	++	1/45	..
24	J. H—	..	++	±	..	++	+	..	+	+	+	+	+	+	±	++	++	++	++	..	+	++	+	1/5	..

Cases Nos. 17, 21 and 23 showed complete agreement, and were positive.

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TABLE VI.—*Group F: Partial and Complete Disagreements Occurring in Treated Paralytics from Nine Months to Three Years after Malaria.* (*Sera.*) [BLOOD.

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).												Muller (M.B.R. II and M.B.R. Z.).					K.	Sachs-Georgi and Sachs-Witebsky.				W.	Remarks.
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.) Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	
19	J. V—	++	..	..	++	..	..	±	++	..	..	..	..	++	..	++	..	..	++	..	+	+	..	1/5	..
20	W. C—	++	++	..	++	++	..	++	++	..	+	+	..	+	..	++	..	..	—	..	—	+	..	1/6	..
23	J. H—	..	++	+	..	++	++	++	++	++	+	+	+	++	..	++	±	+	+	..	++	—	+	1/4	..
24	A. R—	..	++	++	..	++	++	++	++	++	++	++	++	++	++	++	++	++	++	..	++	+	++	—	..
25	A. U—	..	++	++	..	++	++	..	++	++	++	+	+	++	+	++	±	+	+	..	++	—	—	1/10	..
26	W. B—	..	±	++	..	±	++	..	+	++	—	—	—	++	++	++	+	++	++	..	++	+	++	1/45	..
27	A. U—	..	++	..	..	+	..	..	..	..	+	..	..	—	±	—	+	..	+	..	±	+	+	1/8	..
28	T. M—	..	+	+	..	+	++	..	+	+	—	+	++	+	+	+	+	++	+	..	+	±	±	1/3	..
29	G. R—	..	+	±	..	+	+	..	+	+	+	+	+	+	+	—	±	+	+	..	+	—	±	±	..
30	A. U—	..	++	..	..	+	..	..	..	..	+	..	..	+	+	++	+	+	+	..	+	+	—	1/6	..
31	W. C—	..	+	+	..	++	++	..	+	+	+	+	++	±	+	—	—	+	+	..	+	—	—	1/4	..
32	J. V—	..	++	—	..	+	+	..	+	+	++	+	+	+	+	++	±	+	++	..	—	+	+	1/4	..
33	W. P—	..	++	+	..	+	+	+	+	+	++	++	++	+	+	++	—	++	+	..	+	+	+	—	..
35	F. M—	..	++	++	..	+	+	+	+	+	++	++	++	+	+	++	±	++	++	..	—	+	±	±	..

Cases Nos. 21, 22 and 34 showed complete agreement, and were positive.

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TABLE VII.—*Group G: Partial and Complete Disagreements Occurring in Treated Paralytics from Three to Nine Years after Malaria. (Sera.)*

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).												Muller (M.B.R. II and M.B.R. Z.).					K.	Sachs-Georgi and Sachs-Witebsky.				W.	Remarks.
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str.	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.) Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	
25	J. T—	..	+	+	..	++	++	+	++	++	+	+	+	±	..	+	+	+	+	..	+	±	—	—	..
26	A. B—	..	++	±	..	+	+	..	+	—	+	+	+	±	±	±	—	—	—	..	++	—	—	—	..
27	T. D—	..	++	++	..	++	++	..	+	++	++	+	++	+	±	+	+	±	++	..	+	—	++	±	..
28	J. N—	..	—	—	..	+	—	..	±	—	±	—	+	±	±	—	±	—	+	..	++	—	+	—	..
29	C. R—	..	++	++	..	++	++	..	++	++	++	+	++	++	++	++	++	+	++	..	+	+	±	1/3	..
30	T. W—	..	++	++	..	++	++	..	++	++	++	+	++	+	+	+	±	+	++	..	++	++	+	1/10	..
31	T. M—	..	++	+	..	++	++	..	++	++	++	++	++	++	++	+	+	++	±	..	—	±	+	—	..
32	T. B—	..	++	++	..	++	++	..	++	++	++	+	++	+	+	+	+	+	++	..	+	±	—	±	..
34	J. C—	..	+	±	..	+	+	..	+	+	++	+	+	+	+	++	±	+	++	..	+	—	—	1/8	..
35	S. D—	..	+	+	..	++	+	..	++	+	+	..	..	+	±	±	+	+	++	..	+	—	±	—	..
36	A. F—	..	++	++	..	+	+	..	++	+	++	++	++	++	++	+	++	++	+	..	+	—	±	±	..
38	A. K—	..	++	+	..	+	+	..	+	++	++	++	++	+	+	±	++	+	±	..	+	—	+	—	..
39	W. L—	..	++	±	..	±	+	..	—	—	—	+	±	—	—	—	—	+	±	..	+	—	+	—	..
40	J. R—	..	++	..	..	++	..	..	++	..	++	..	..	—	—	±	+	..	+	..	+	±	—	—	..
42	A. S—	..	±	—	..	+	±	..	+	±	+	+	—	±	±	±	±	—	+	..	+	—	—	—	..
44	W. W—	..	+	+	..	+	+	+	+	+	+	+	+	+	+	+	±	+	+	..	+	—	—	—	..

Cases Nos. 33, 37, 41, 43, 45 and 46 showed complete agreement, and were positive.

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TABLE VIII.—*Group A : Partial and Complete Disagreements in the Fluids of Non-syphilitics.* [CEREBRO-SPINAL FLUID.

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z).												Muller (M.B.R. II and M.B.R. Z).					K.	Sachs-Georgi and Sachs-Witebsky.				W.					
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str.	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.) Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	Cell-count.	Globulin (Pandy).	Boltz.	Hopkins-Cole.	Protein estimation (mgrm. per 100 c.c.).	Lange colloidal gold.
32	E. R—	—	—	..	—	—	..	..	—	..	±	—	..	—	..	—	..	..	—	..	—	—	..	—	—	—	—	1	25	00011, 00000
36	M. D—	—	—	..	—	—	—	—	..	..	±	—	..	—	..	—	..	..	—	..	—	±	..	—	15	+	—	1	60	00111, 00000
42	J. H—	..	—	—	±	—	—	..	—	—	±	—	—	—	..	—	..	..	—	..	—	—	—	—	—	—	—	1	20	00011, 00000
43	J. K—	..	—	—	±	—	..	+	—	—	±	—	—	—	—	—	±	±	—	..	—	—	—	—	—	—	—	1	10	00000, 00000
49	J. W—	..	—	—	..	—	±	..	—	..	..	—	..	—	—	—	—	±	—	..	—	—	—	—	—	—	—	1	10	00011, 10000
78	E. C—	..	—	—	..	—	—	..	—	±	—	—	—	—	—	±	—	—	—	..	—	—	—	—	—	+	—	2	70	00111, 00000
79	R. C—	..	—	..	..	+	..	..	..	..	+	..	..	—	—	—	..	..	—	..	—	±	—	—	—	+	—	..	50	00122, 10000
81	W. C—	..	—	..	..	—	..	..	..	..	+	..	..	—	—	—	—	..	—	..	—	—	—	—	—	—	—	..	15	00001, 10000
83	J. P—	..	—	—	..	—	—	..	—	—	±	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	15	00000, 00000
87	H. M—	..	—	—	..	—	—	..	—	—	+	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	10	00000, 00000
89	J. B—	..	—	—	..	+	—	..	—	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	15	00011, 00000
92	T. H—	..	—	—	..	—	—	..	—	—	±	—	—	—	—	—	—	—	—	..	—	—	—	—	..	—	—	1	25	00011, 00000
98	J. H—	..	—	—	..	—	—	..	—	—	±	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00011, 00000
99	J. T—	..	—	—	..	—	—	..	—	—	+	—	±	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00011, 10000
101	C. A—	..	—	—	..	—	±	..	—	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	15	00110, 00000

Cases Nos. 35, 39, 40, 45, 59, 65, 88, 91 and 100 showed complete agreement, and were negative.

TABLE IX.—*Group B : Partial and Complete Disagreements in the Fluids of Syphilitic and Clinically Doubtful Cases with Negative Sera.* [CEREBRO-SPINAL FLUID.

46	D. R—	..	—	—	..	—	—	..	+	—	—	—	—	—	—	—	—	—	—	..	+	—	—	—	45	+	—	2	180	00012, 21100
50	J. H—	..	—	—	..	+	—	..	—	—	+	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	25	00011, 00000
52	L. T—	..	—	—	..	—	—	..	±	—	+	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	25	00011, 10000
53	J. W—	..	—	—	..	—	—	..	—	—	+	—	—	—	—	—	—	—	—	..	—	—	±	—	—	—	—	1	15	00132, 10000
55	E. G—	..	—	—	..	—	—	..	±	—	+	—	—	—	—	±	—	—	—	..	—	—	—	—	—	—	—	1	15	00012, 00000
58	T. B—	..	—	—	..	—	±	..	—	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00011, 00000
59	L. F—	..	—	—	..	—	—	..	—	±	—	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00011, 00000
62	H. H—	..	—	—	..	—	±	..	—	±	±	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	10	00011, 00000
63	H. L—	..	—	—	..	—	—	..	—	—	+	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	15	00011, 10000

Cases Nos. 32, 33, 34, 36, 38, 39, 40 and 60 showed complete agreement, and were negative.

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TABLE X.—*Group C: Partial and Complete Disagreements in the Fluids of Positive Syphilitics, excluding General Paralysis.* [CEREBRO-SPINAL FLUID.

35	J. I—	+	+	..	+	+	..	+	..	..	..	..	..	±	..	+	..	..	..	..	+	+	..	++	120	+	—	3	35	23332, 21000
47	J. F—	±	+	..	—	+	..	..	±	..	±	+	..	+	..	+	..	..	+	..	—	—	..	+	—	—	—	1	20	00122, 21000
49	T. A—	..	—	—	..	±	—	..	—	—	—	—	—	—	..	—	—	—	—	..	—	±	—	—	—	—	—	1	20	00111, 00000
50	J. M—	..	—	—	..	—	±	..	—	—	—	—	—	—	..	—	—	—	—	..	—	—	—	—	15	—	—	1	15	00111, 10000
51	W. M—	..	—	—	..	—	÷	..	—	—	—	—	—	—	..	—	±	—	—	..	—	+	—	—	—	—	—	1	15	00011, 00000
53	A. B—	..	—	—	..	±	—	..	+	—	—	—	—	—	..	—	—	±	—	..	—	—	—	—	—	—	—	1	15	00110, 00000
54	T. S—	..	—	—	..	±	—	..	±	—	+	+	—	—	..	—	±	—	—	..	—	—	—	—	—	—	—	1	20	00100, 00000
55	W. W—	..	—	—	..	—	—	..	—	—	—	—	—	—	..	—	—	—	—	..	±	—	—	—	15	+	—	1	35	00012, 10000
57	J. R—	..	±	..	..	—	..	..	—	..	..	+	..	++	..	++	..	..	+	..	—	+	..	++	45	+	—	1	20	01233, 21000
60	D. M—	..	—	—	..	±	—	..	+	—	—	—	—	—	—	—	±	±	—	..	—	—	—	—	—	—	—	1	10	00000, 00000
61	G. M—	..	—	—	..	—	—	..	±	—	—	—	—	—	—	—	—	±	—	..	—	—	—	—	—	—	—	1	15	00011, 00000
65	E. B—	..	—	—	..	—	—	..	±	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00000, 00000
71	G. D—	..	—	—	..	—	—	..	++	+	—	—	—	—	—	—	—	±	—	..	—	±	—	—	—	—	—	1	15	00000, 00000
76	J. G—	..	—	—	..	—	—	..	±	±	+	—	—	—	±	—	+	—	—	..	—	±	—	—	—	—	—	1	30	00011, 10000
84	W. H—	..	++	++	..	++	++	..	++	±	±	++	++	—	—	—	—	—	—	..	—	—	±	—	—	—	—	1	15	00011, 00000
85	G. W—	..	+	+	..	+	±	..	+	±	++	±	±	++	++	++	+	+	++	..	—	±	—	+	45	+	—	1	25	00122, 11000
91	J. W—	..	+	++	..	+	++	..	+	++	++	+	+	+	+	+	+	—	++	..	—	—	—	++	—	—	+	1	10	12343, 32100
92	M. H—	..	++	++	..	±	++	..	++	±	±	++	++	++	+	++	±	+	++	..	+	+	—	++	30	+	+	2	60	12343, 32100
93	D. K—	..	++	++	..	+	++	..	++	++	+	++	++	++	++	++	±	±	++	..	++	+	+	++	—	+	—	2	80	00123, 32100
95	O. F—	..	+	..	..	±	..	..	—	..	—	..	..	—	—	—	—	..	—	..	+	—	—	..	15	+	+	..	250	01233, 21000
96	H. W—	..	+	..	..	+	..	..	..	..	—	..	..	..	..	..	..	..	+	..	+	+	..	+	30	+	—	..	70	33443, 21000
97	H. D—	..	—	—	..	—	—	..	±	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00011, 00000
98	P. J—	..	—	—	..	—	—	..	±	—	—	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00122, 10000
100	L. D—	..	—	..	..	—	..	..	+	+	—	..	..	—	—	—	—	—	—	..	—	—	—	—	—	+	—	1	..	00012, 21000
101	M. F—	..	..	..	..	..	..	..	+	+	±	..	..	—	—	—	—	—	—	..	—	+	—	±	..	+	+	2	..	00123, 32100
105	M. G—	..	—	—	..	—	—	..	—	—	—	—	—	—	—	—	—	+	—	..	—	—	—	—	—	—	—	2	20	00111, 00000
108	J. M—	..	—	—	..	±	—	..	+	—	—	—	—	—	—	—	±	—	—	..	—	—	—	—	—	—	—	1	10	00000, 00000
110	J. J—	..	++	++	..	+	+	..	++	++	+	++	++	++	++	++	±	±	++	..	+	+	—	++	30	+	—	2	70	33342, 11100
111	F. T—	..	++	+	..	++	+	..	++	++	+	++	±	++	+	++	—	+	++	..	±	—	—	++	—	—	—	1	25	01123, 21000
113	S. N—	..	—	—	..	+	—	..	+	+	—	—	—	+	—	+	—	—	+	..	—	—	—	+	—	—	—	1	20	00122, 10000
114	J. W—	..	—	—	..	—	—	..	—	—	±	±	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	20	00011, 10000
115	E. B—	..	—	—	..	—	—	..	+	—	+	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	25	00011, 00000

Cases Nos. 32, 33, 34, 36, 37, 43, 44, 52, 56, 58, 62, 64, 89, 90, 94, 112, 117 and 119 showed complete agreement and were negative, whilst Case No. 63 was completely positive.

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TABLE XI.—*Group D: Partial and Complete Disagreements in the Fluids of Untreated Paralytics.* [CEREBRO-SPINAL FLUID

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).												Muller (M.B.R. II and M.B.R. Z.).					K.	Sachs-Georgi and Sachs-Witebsky.				W.					
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str.	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.) Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	Cell-count.	Globulin (Pandy).	Boltz.	Hopkins-Cole.	Protein estimation (mgrm. per 100 c.c.).	Lange colloidal gold.
27	J. K—	++	++	..	+	++	..	—	..	..	..	..	..	++	..	++	..	..	++	..	+	—	..	++	465	+	—	2	55	55554, 32100
30	T. D—	++	++	..	±	+	..	..	—	..	++	++	..	++	..	++	..	..	++	..	++	++	..	++	135	+	+	3	80	55555, 43210
31	J. C—	..	+	+	..	+	+	..	++	..	..	++	..	+	..	++	+	±	++	..	++	++	++	++	75	+	+	3	80	45555, 43221
32	H. J—	..	++	++	..	++	++	..	++	..	..	++	..	+	..	++	+	+	++	..	++	++	—	++	195	+	+	3	55	55555, 43210
33	S. L—	..	++	++	..	++	++	..	++	..	..	++	..	+	..	++	±	—	++	..	++	++	+	++	30	+	+	3	45	45554, 32210
34	A. P—	..	+	++	..	++	++	..	±	..	..	—	..	++	..	++	+	+	++	..	++	++	±	++	210	+	+	3	50	55555, 43210
36	T. R—	++	++	..	++	++	..	..	++	..	—	++	..	++	+	++	..	..	++	..	++	—	..	++	15	+	—	2	40	45554, 32100
37	R. H—	..	++	++	..	++	++	..	++	..	..	+	..	++	++	++	+	—	++	..	++	+	+	++	165	+	—	3	90	55555, 43310
38	R. W—	..	++	++	..	±	—	..	+	+	—	++	++	++	++	++	±	+	++	..	++	++	++	++	30	+	±	3	50	55555, 43321
39	W. M—	..	+	++	..	+	+	..	++	++	+	++	++	++	+	++	+	++	++	..	+	+	—	++	30	+	+	3	75	55555, 43210
40	H. B—	..	+	..	..	±	..	..	..	..	+	..	..	+	++	++	+	..	++	..	+	±	+	++	45	+	—	3	80	55554, 43210
41	W. F—	..	+	++	..	++	++	..	+	++	—	+	+	++	+	++	++	++	++	..	++	++	+	++	60	+	+	3	100	45555, 54322
42	H. P—	..	+	++	..	+	+	..	—	+	—	+	+	+	+	++	±	++	++	..	++	++	+	++	—	+	+	2	60	45555, 43210
43	J. H—	..	—	±	..	—	+	..	+	++	+	—	±	++	++	++	+	++	++	..	+	+	+	++	60	+	+	3	90	45555, 44321
45	W. J—	..	+	++	..	++	++	..	++	+	++	++	++	++	+	++	+	++	++	..	+	+	—	++	30	+	—	2	80	55555, 43211
46	F. S—	..	++	++	..	+	++	..	±	+	+	+	+	++	+	++	—	+	+	..	+	—	—	++	45	+	+	3	90	55554, 33210
47	G. T—	..	++	+	..	+	++	..	++	++	+	++	+	+	+	+	—	±	+	..	±	—	±	++	—	+	—	2	80	45554, 32100
48	A. J—	..	+	+	..	+	++	..	+	+	+	++	++	++	+	++	±	±	++	..	+	++	+	++	45	+	+	3	70	45555, 43210
49	E. E—	..	++	++	..	++	+	..	±	+	±	++	++	++	++	++	+	+	++	..	++	++	++	++	45	+	+	2	60	45555, 43210
50	W. B—	..	++	++	..	+	±	..	+	+	±	±	++	++	++	++	+	++	++	..	++	++	++	++	15	+	+	3	80	55555, 43210

Cases Nos. 28, 29, 35 and 44 showed complete agreement.

TABLE XII.—*Group E: Partial and Complete Disagreements in the Fluids of Treated Paralytics up to Nine Months after Malaria.* [CEREBRO-SPINAL FLUID

17	T. H—	..	+	++	..	+	+	..	+	+	—	+	+	+	+	+	±	±	..	..	±	+	±	..	..	+	—	2	..	..
18	J. K—	..	—	—	..	+	+	..	++	±	++	+	±	+	+	+	—	±	++	..	±	—	±	+	30	+	—	1	50	44554, 32100
19	G. L—	..	++	++	..	++	++	..	++	+	+	++	++	++	+	++	—	+	++	..	—	—	—	++	—	+	—	1	35	13432, 21000
21	A. P—	..	++	++	..	++	++	..	±	++	—	+	+	++	++	++	+	++	++	..	++	++	++	++	135	+	±	3	120	45555, 54321
22	R. C—	..	++	+	..	±	+	..	++	±	+	++	+	+	±	+	—	++	++	..	++	+	+	++	15	+	—	2	25	34554, 32100

Cases Nos. 20 and 23 showed complete agreement, and were positive.

TABLE XIII.—*Group F: Partial and Complete Disagreements in the Fluids of Treated Paralytics from Nine Months to Three Years after Malaria.* [CEREBRO-SPINAL FLUID.

19	J. V—	—	—	..	—	—	..	—	..	..	..	..	..	—	..	+	..	..	..	..	—	—	..	—	..	+	—	2	35	01222, 10000
20	W. C—	—	+	..	±	+	..	±	..	..	..	..	..	—	..	±	..	..	+	..	—	—	..	++	15	+	—	1	50	00122, 21000
22	J. W—	..	+	+	..	±	+	..	—	±	+	+	++	+	+	+	±	+	+	..	±	+	+	++	15	+	—	2	50	12443, 32110
23	J. H—	..	++	+	..	++	++	..	+	+	±	++	++	++	++	++	+	+	++	..	+	++	+	++	30	+	+	3	80	55555, 54332
24	A. R—	..	—	—	..	—	—	..	+	—	+	—	—	+	±	±	—	—	+	..	—	—	—	—	—	—	—	1	25	00012, 11000
25	A. U—	..	+	+	..	++	+	..	++	±	+	+	+	++	+	++	—	±	++	..	+	—	—	++	30	+	—	2	40	45554, 33210
26	W. B—	..	++	++	..	+	++	..	++	+	—	+	++	++	++	++	++	++	++	..	++	++	++	++	30	+	+	3	120	55555, 44321
28	T. M—	..	±	..	..	+	..	..	..	..	—	..	..	—	—	+	..	..	+	..	—	±	—	+	—	+	—	..	60	00123, 21000
29	G. R—	..	±	..	..	—	..	..	..	..	+	..	..	—	—	—	..	..	—	..	±	—	±	—	15	+	—	..	45	01233, 32100
30	A. U—	..	++	..	..	++	..	..	..	..	—	..	..	+	+	++	+	+	++	..	+	+	+	++	60	+	—	..	65	45554, 42100
31	W. C—	..	—	—	..	—	—	..	—	—	—	—	—	—	±	—	—	—	+	..	+	—	—	+	—	+	—	2	35	00012, 21000
32	J. V—	..	—	—	..	—	±	..	—	—	+	—	—	—	±	+	—	—	—	..	—	—	—	—	—	+	—	1	20	00112, 11000
33	W. P—	..	—	—	..	—	—	..	—	—	±	±	—	+	+	++	—	—	++	..	—	—	—	+	15	+	—	1	20	00112, 11000
34	T. H—	..	+	+	..	..	..	..	..	..	—	++	+	++	++	++	—	+	++	..	—	—	±	++	—	—	—	1	15	45555, 43210
35	F. M—	..	+	±	..	+	+	..	+	—	+	+	—	+	±	+	—	+	+	..	—	—	—	+	—	—	—	1	20	01122, 10000

Case No. 27 showed complete agreement, and was positive.

TABLE XIV.—*Group G: Partial and Complete Disagreements in the Fluids of Treated Paralytics from Three to Nine Years after Malaria.* [CEREBRO-SPINAL FLUID.

No.	Name.	Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).												Muller (M.B.R. II and M.B.R. Z.).					K.	Sachs-Georgi and Sachs-Witebsky.				W.						Lange colloidal gold.
		Macro-M.K.R.	Macro-M.K.R. II.	Macro-M.K.R. str.	Indirect micro-M.K.R.	Indirect micro-M.K.R. II.	Indirect micro-M.K.R. str.	Direct micro-M.K.R.	Direct micro-M.K.R. II.	Direct micro-M.K.R. str.	Original M.K.R. Z.	Modified M.K.R. Z.	Modified M.K.R. Z. str.	M.B.R. II.	M.B.R. slow.	M.B.R. Z.	Indirect micro-M.B.R. II.	Direct micro-M.B.R. II.	Kahn (routine).	Original-Sachs-Georgi.	Modified (B.W.)Sachs-Georgi.	Ordinary-Sachs-Witebsky.	Micro-Sachs-Witebsky.	Wassermann.	Cell-count.	Globulin (Pandy).	Boltz.	Hopkins-Cole.	Protein estimation (mgrm. per 100 c.c.).	
25	J. T—	..	—	—	..	—	—	..	—	—	±	—	—	—	—	—	—	±	++	..	+	—	—	—	30	+	±	2	50	00122, 21000
26	A. B—	..	—	—	..	—	—	..	±	±	—	—	—	—	—	—	—	±	—	..	±	±	—	—	—	+	—	2	45	00011, 10000
27	T. D—	..	—	—	..	—	—	..	+	—	±	—	—	—	—	—	—	—	—	..	—	—	—	—	—	—	—	1	15	12232, 00000
28	J. N—	..	—	—	..	—	—	..	++	—	+	—	—	±	—	—	—	—	++	..	—	—	—	—	—	—	+	2	30	00132, 11000
29	C. R—	..	—	—	..	—	—	..	+	—	++	±	—	—	—	—	—	—	+	..	—	±	—	—	—	—	—	1	20	00133, 22100
30	T. W—	..	+	+	..	+	±	..	++	+	+	++	++	++	++	+	±	++	+	..	±	+	+	+	+	—	+	3	80	00145, 32100
31	T. M—	..	±	—	..	+	±	..	±	+	+	±	—	±	—	+	±	+	+	..	±	+	+	+	+	—	—	1	15	00011, 10000
32	T. B—	..	—	—	..	—	—	..	—	+	+	—	—	—	—	+	—	+	++	..	—	—	—	—	—	—	—	1	20	00011, 00000
33	J. C—	..	—	—	..	—	—	..	±	—	+	±	—	±	—	+	—	—	—	..	+	±	—	—	—	—	—	1	20	00122, 10000
34	J. C—	..	—	—	..	—	—	..	—	—	+	+	—	+	+	++	—	—	++	..	+	—	—	++	—	—	+	2	30	01233, 21000
35	S. D—	..	+	..	..	+	..	..	..	..	+	..	..	—	—	—	—	..	++	..	±	—	—	—	—	..	..	..	..	..	..
36	A. F—	..	—	—	..	—	—	..	..	..	+	..	—	—	—	—	—	..	—	..	—	—	—	—	—	—	—	..	..	00011, 00000
37	C. G—	..	—	—	..	±	±	..	—	±	+	—	—	—	±	—	—	—	—	..	±	—	—	—	—	—	—	..	..	00111, 00000
38	A. K—	..	—	..	..	—	..	..	—	..	+	..	..	—	—	—	—	±	—	..	—	—	—	—	—	—	—	..	..	00011, 00000
39	W. L—	..	±	—	..	—	—	..	+	—	+	±	—	—	—	—	—	±	+	..	—	—	—	—	+	—	+	2	35	01233, 21000
40	J. R—	..	±	—	..	±	—	..	++	—	+	±	±	—	—	—	—	±	+	..	—	—	—	—	±	15	—	1	15	00122, 10000
41	J. C—	..	—	..	..	—	..	..	..	..	+	..	..	±	±	±	..	..	++	..	±	+	±	—	—	—	—	..	25	00111, 00000
42	A. S—	..	+	..	..	—	..	..	..	..	+	..	..	—	—	—	..	..	+	..	±	±	+	—	—	—	—	..	25	00122, 10000
43	E. W—	..	—	..	..	—	..	..	..	..	+	..	..	—	—	—	..	..	—	..	—	—	—	—	—	—	—	..	20	00011, 00000
44	W. W—	..	—	—	..	—	—	..	+	—	+	±	±	—	—	—	—	—	—	..	—	—	+	—	—	—	+	1	50	00132, 10000
45	J. W—	..	—	—	..	±	—	..	±.	±	+	—	—	++	+	++	±	+	+	..	—	+	—	+	—	—	+	—	1	20	02344, 43210

No case showed complete agreement.

Group C.—Ninety positive syphilitics exclusive of general paralysis. Of these, 34 showed complete agreement, 14 showed partial agreement, and 42 disagreements.

No. 46 is a congenital syphilitic with active tuberculosis. No. 59 is also a congenital case. No. 99 appears doubtful, but he was done once before as No. 76. Both No. 120 and No. 121 were tested before treatment as Nos. 40 and 77 respectively. Cases Nos. 33, 36, 54, 60, 108, 109, 116 and 117 may appear doubtful serologically, but they have been included in this group because they all give definite histories of syphilis.

Group D.—Twenty-four untreated paralytics. Of these 9 showed complete agreement, 4 showed partial agreement, and 11 disagreements. In case No. 27 the M.B.R. gave a complete negative for no accountable reason, as other cases in the same batch gave good positives. Nos. 37 and 41 show remarkable failures with the M.K.R. tests, while the modified Sachs-Georgi failed in No. 43.

Group E.—Eight treated paralytics, examined up to nine months after malaria. Of these, 3 showed complete agreement, 3 showed partial agreement, and 2 disagreements. The negative Wassermann in No. 18 is of interest.

Group F.—Seventeen treated paralytics examined from nine months to three years after malaria. Of these, 3 showed complete agreement, 1 showed partial agreement, and 13 disagreements. There were a few failures in the M.B.R. and Sachs-Witebsky tests. No. 20 is of interest in that it is our only instance (in paralytics) of a negative Kahn with a positive Wassermann ; one other case occurred in which the Wassermann was correctly positive and the Kahn negative, case No. C40.

Group G.—Twenty-two paralytics examined from three to nine years after malaria. Of these, 6 showed complete agreement, 1 showed partial agreement, and 15 disagreements. Although many show very numerous negative reactions, yet none fail to show some positives, though it must be admitted that if it were not for their being known paralytics, cases Nos. 26 and 39 might seem rather doubtful serologically.

It will be seen that in the whole series certain cases gave rise to some difficulty as regards their final classification. As noted earlier, 6 syphilitics were classed as negative, as were also 4 doubtful cases without histories. The serologically doubtful cases classed as positive owing to a definite history numbered 10.

Spinal Fluid.

The results here will be considered generally. In the 75 fluids classed as positive there were 8 complete agreements, 9 partial agreements, and 58 disagreements. In the 85 fluids classed as negative there were 35 complete agreements, 21 partial agreements, and 29 disagreements.

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In groups A and B, cases A78, A79 and B53 showed some positive results with a slight change in the colloidal gold curve, but in the absence of any clinical signs or positive reactions in the blood they were classed as negative. Case B46 did give a few neurological signs, but not enough for a definite diagnosis to be established.

In Group C numerous fluids turned out definitely negative. Cases 51, 53, 60, 76, 100 and 115 may have seemed a little doubtful serologically, but here again there was a complete absence of signs suggestive of neurosyphilis.

Cases 57, 63, 66, 85, 93, 95, 96, 101 and 113 were tabetics, and Cases 35, 47, 69, 91, 92, 110 and 111 had meningo-vascular syphilis.

In Groups D and E there is a very fair agreement.

In Groups F and G numerous failures occur, and it has been a very difficult matter to decide when certain fluids are to be classed as positive and when as negative. Most of these fluids have been kept in the positive group for statistical purposes, except Nos. F29, G26, G27, G36, G37, G38, G43 and G44; in these, such a majority of tests—including some of the most sensitive ones—gave a negative result that they were finally classed as negative.

It is noteworthy how, in treated paralytics, the fluid reactions may become partly or even completely negative, whereas the serum tends to be much more persistently positive.

Summary of Both Reports and Test Results.

In all, 440 sera and 330 fluids from the same cases were selected for the simultaneous application of tests, The sera came from the following types of cases: 151 non-syphilitics (with 90 fluids); 17 congenital cases (with 8 fluids); 93 latent and endo-syphilitics (with 60 fluids); 10 meningo-vascular syphilitics (with 9 fluids); 14 tabetics (with 12 fluids); 50 untreated paralytics (with 50 fluids); and 105 treated paralytics (with 101 fluids). These last 105 were obtained from 60 *patients*, many of these being examined more than once, with an average interval of one year between the two examinations. There were 4 cases amongst the non-syphilitics, and 6 syphilitics, who appear twice in the series. The nature and numbers of tests done were as follows:

Test.	Blood.	Fluid.	Total.
Macro-M.K.R.	222	117	339
,, M.K.R. II	230	160	390
,, M.K.R. II str.	186	111	297
Indirect micro-M.K.R.	135	53	188
,, micro-M.K.R. II	230	160	390
,, micro-M.K.R. II str.	186	111	297
Direct micro-M.K.R.	324	157	481
,, micro-M.K.R. II	269	122	391
,, micro-M.K.R. II str.	187	104	291

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Test.	Blood.	Fluid.	Total.
Original M.K.R.Z.	192	128	320
Modified M.K.R.Z.	212	120	332
,, M.K.R.Z. str.	154	101	255
M.B.R. II	234	157	391
M.B.R. slow	168	110	278
M.B.R.Z.	232	157	389
Indirect micro-M.B.R.	185	119	304
Direct micro-M.B.R.	176	111	287
Kahn routine	249	150	399
Original Sachs-Georgi	128	74	202
Modified Sachs-Georgi	426	328	754
Original Sachs-Witebsky	413	304	717
Indirect micro-Sachs-Witebsky	207	161	368
Modified indirect micro-Sachs-Witebsky	60	..	60
Direct micro-Sachs-Witebsky	40	..	40
Wassermann, modified Wyler No. 1 (Manchester)	417	301	718
	5,462	3,416	8,878
Other fluid tests (globulin, Lange, etc.)	..	1,888	1,888
	5,462	5,304	10,766
Test repeated	.	.	239
Total tests			11,005

Meinicke.

Blood.—The macro-M.K.R. and macro-M.K.R. II have proved very sensitive, giving 93·1% and 90·3% positive with 4·6% and 6·0% doubtfuls in positive cases ; but they also gave 5·6% and 9·4% false positives in the controls. The old test would therefore appear slightly better than the new, but the series is not large enough to warrant a definite conclusion on the matter.

The direct micro-M.K.R. and direct micro-M.K.R. II gave a sensitivity of 90·6% and 92·3%, with 7·8% and 4·5% doubtfuls, the false positives in the controls totalling 6·2% and 7·1% respectively.

The indirect micro-M.K.R., done from the tubes of the macro-test, showed a sensitivity of 92·8% positives and 4·3% doubtfuls, but this test was only done from *some* of the macro-tests. The indirect micro-M.K.R. II, however, was performed on all cases that had the corresponding macro-test done, and it is interesting to note the increase of sensitivity thus attained ; the macro-M.K.R. II gave 90·3% positives with 6·0% doubtfuls, while the indirect

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micro-M.K.R. II gave 93·3% positives and 3·0% doubtfuls. That there was no corresponding decrease in specificity is shown by the number of false positives obtained by the two tests, 9·4% and 5·2% respectively.

The results obtained by the old M.K.R. tests have been analysed in greater detail elsewhere (186), and the inapplicability of Prentice's one-tube method (102) already noted there has again been borne out by our results with the M.K.R. II. The use of the one-tube method may account for some of the startling results recently recorded (167).

The original M.K.R.Z. proved good. It gave a sensitivity of 89·8% positives and 3·4% doubtfuls, the controls yielding 5·4% of false positives. The modified M.K.R.Z., however, was no more specific and was less sensitive, giving 78·9% positive, and 12·2% doubtfuls.

The use of the "strong" extract proved disappointing, and strangely enough resulted in more specificity and less sensitivity. The macro-M.K.R. II str., the direct micro-M.K.R. II str. and the modified M.K.R.Z. str. gave sensitivities of 80·6%, 90·8% and 82·8% positives, and 11·1%, 2·8% and 3·7% doubtfuls, respectively. The false positives numbered 2·6%, 6·4% and 1·6%. But reading the macro-M.K.R. II str. as a micro-test (the indirect micro-M.K.R. II str.) gave surprisingly good results, namely, 92·6% positives and 2·8% doubtfuls in positive cases, with only 1·3% false positives in the controls.

Dr. Meinicke states, however (in a personal communication), that he has discontinued the use of the strong extract. His new standard antigen—which has not yet been used here—is prepared and coloured much like the strong extract, and this alone may give better and clearer readings.

On the whole, then, our results confirm those of other recent observers (160, 161, 170, 177, 182, 183, 196, 198, 199, 205, 207). As to the exact comparisons of the different M.K.R. techniques, the kind of cases likely to be missed, etc., these will form the subject of a future communication.

Spinal fluid.—In fluid the M.K.R. tests gave much less satisfactory results. The old macro-M.K.R. did well (sensitivity of 81·8%), but as it was not applied to as many cases as the other tests, this may have been due to chance. The sensitivity of the other tests varied considerably, from 73·2% (direct micro-M.K.R.) to 54·5% (modified M.K.R.Z. str.). The most unspecific was the original M.K.R.Z., giving 25·4% false positives. It was on account of these numerous false positives of the original M.K.R.Z. that a modification was devised; as a result, the sensitivity rose from 62·3% positives and 13·1% doubtfuls to 67·6% positives and 14·2% doubtfuls, while unspecificity fell from 25·4% false positives and 13·4% doubtfuls (in negative controls) to only 3·1% false positives and 3·1% doubtfuls.

Nevertheless, the M.K.R. reactions do not seem as good for fluid as for blood, though one observer has reported very satisfactory results with the micro-method, noting only 2% false positives (195).

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The applying of these tests to fluids is still in its experimental stage, and the difficulty of obtaining sufficient fluid with reasonable frequency limits considerably the trying of the modifications in technique that may be necessary before really satisfactory results are obtained.

Muller.

Blood.—The M.B.R. II and M.B.R.Z. gave very satisfactory results, the sensitivity being 85·5% and 86·2% positives, with 8·7% and 8·0% doubtfuls. The false positives numbered 3·1% and 3·2%. The M.B.R. slow, on the other hand, has given no false positives, but 10·7% doubtfuls (in negative cases). In positive cases it gave 81·3% positives with 11·8% doubtfuls. Judging from the few communications we have found on the subject (162, 163, 184, 204) in foreign journals and the two recent English ones (189, 190), the above results seem to agree with the findings of others, except in respect of false positives. Some (*e.g.*, 204) find no false positives, but seem to adopt an unusually strict standard of reading, apparently neglecting finer ball-complexes and saying little about coarse flocculation (as distinct from the fine punctate precipitate about which one is warned by Muller). Had we adopted such a standard we should have reduced our number of doubtfuls by about six, but our false positives by only one, as the other two obtained were definite large ball-formations. In a recent communication (190) the M.B.R. is stated to have given one false positive in a series of 1,000 sera, but as the particular technique employed is not given, and the number of non-syphilitics examined not stated, this result is of little value, and does not allow of comparison with the figures of other observers.*

The disadvantage of the M.B.R. slow would seem to be the occurrence of large numbers of doubtful reactions coupled with a slightly lower sensitivity, but it is more specific. The M.B.R. II and M.B.R.Z., on the other hand, are more definite and can be read sooner. More detailed analyses of our M.B.R. results have appeared already (187).

In view of the value of micro-methods in mental hospital practice, two such micro-methods with the Muller antigen were devised. The indirect micro-test gave surprisingly poor results, the sensitivity being only 63·3% positives with 21·1% doubtfuls (a very high proportion of doubtfuls), and 5·3% false positives. The direct method, however, gave better results. It yielded slightly more false positives (8·2%), but it was more sensitive, giving 81·6% positives and 9·7% doubtfuls. The great difficulty here is the reading of the results, and it is possible that these tests may be improved; in any case, the question of micro-tests with Muller's antigen will, it is hoped, form the subject of a future paper.

* Another author (163) gives as many as 3·6%

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TABLE XV.—*Percentage Errors with Each Test on Blood.*

	Test.	All cases.	Positive sera.							Negative sera.						
			Total sera.	Positive results.		Doubtful results.		False negatives.		Total sera.	Negative results.		Doubtful results.		False positives.	
				No.	%.	No.	%.	No.	%.		No.	%.	No.	%.	No.	%.
Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).	Macro-M.K.R.	222	133	124	93·1	6	4·6	3	2·3	89	80	89·9	4	4·5	5	5·6
	Macro-M.K.R. II	220	134	121	90·3	8	6·0	5	3·7	96	83	86·4	4	4·2	9	9·4
	Macro-M.K.R. str.	186	108	87	80·6	12	11·1	9	8·3	78	74	94·8	2	2·6	2	2·6
	Indirect micro-M.K.R.	115	69	64	92·8	3	4·3	2	2·9	46	38	82·7	2	4·3	6	13·0
	Indirect micro-M.K.R. II	220	134	125	93·3	4	3·0	5	3·7	96	78	81·3	13	13·5	5	5·2
	Indirect micro-M.K.R. str.	186	108	100	92·6	3	2·8	5	4·6	78	72	92·2	5	6·5	1	1·3
	Direct micro-M.K.R.	322	192	174	90·6	15	7·8	3	1·6	130	111	85·3	11	8·5	8	6·2
	Direct micro-M.K.R. II	269	156	144	92·3	7	4·5	5	3·2	113	95	84·0	10	8·9	8	7·1
	Direct micro-M.K.R. str.	187	109	99	90·8	4	3·7	6	5·5	78	68	87·2	5	6·4	5	6·4
	Original M.K.R. Z.	192	118	106	89·8	4	3·4	8	6·8	74	64	86·5	6	8·1	4	5·4
	Modified M.K.R. Z.	212	123	97	78·9	15	12·2	11	8·9	89	79	88·8	5	5·6	5	5·6
	Modified M.K.R. Z. str.	154	93	77	82·8	7	7·5	9	9·7	61	57	93·5	3	4·9	1	1·6
Muller (M.B.R. II & M.B.R. Z.).	M.B.R. II	234	138	119	85·5	12	8·7	8	5·8	96	85	88·5	8	8·4	3	3·1
	M.B.R. slow	168	102	83	81·3	12	11·8	7	6·9	66	59	89·3	7	10·7	0	0·0
	M.B.R. Z.	232	137	117	86·2	11	8·0	8	5·8	95	84	88·4	8	8·4	3	3·2
	Indirect micro-M.B.R. II	185	109	69	63·3	23	21·1	17	15·6	76	63	82·9	9	11·8	4	5·3
	Direct micro-M.B.R. II	176	103	84	81·6	10	9·7	9	8·7	73	51	69·9	16	21·9	6	8·2
K.	Kahn (routine)	249	148	126	84·6	10	7·0	12	8·4	101	101	100·0	0	0·0	0	0·0
Sachs-Georgi and Sachs-Witebsky.	Original-Sachs-Georgi	128	73	41	56·2	6	8·2	26	35·6	55	54	98·2	1	1·8	0	0·0
	Modified (B.W.) Sachs-Georgi	426	256	197	77·0	23	8·9	36	14·1	170	153	90·0	11	6·5	6	3·5
	Ordinary-Sachs-Witebsky	413	250	163	65·2	29	11·6	58	23·2	163	163	100·0	0	0·0	0	0·0
	Micro-Sachs-Witebsky	207	121	71	58·7	16	13·2	34	28·1	86	68	79·1	15	17·4	3	3·5
W.	Wassermann	417	258	192	74·4	18	7·0	48	18·6	159	154	96·8	3	1·9	2	1·3

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TABLE XVI.—*Percentage Errors with Each Test on Fluid.*

	Test.	All cases.	Positive fluids.							Negative fluids.						
			Total fluids.	Positive results.		Doubtful results.		False negatives.		Total fluids.	Negative results.		Doubtful results.		False positives.	
				No.	%.	No.	%.	No.	%.		No.	%.	No.	%.	No.	%.
Meinicke (M.K.R., M.K.R. II and M.K.R. Z.).	Macro-M.K.R.	117	44	36	81·8	3	6·8	5	11·4	73	72	98·6	1	1·4	0	0·0
	Macro-M.K.R. II	160	72	51	70·9	5	6·9	16	22·2	88	85	96·6	2	2·3	1	1·1
	Macro-M.K.R. str.	111	50	33	66·0	2	4·0	15	30·0	61	60	98·4	0	0·0	1	1·6
	Indirect micro-M.K.R.	53	20	13	65·0	4	20·0	3	15·0	33	29	87·9	3	9·1	1	3·0
	Indirect micro-M.K.R. II	160	72	47	69·5	8	9·8	17	20·7	88	75	85·2	8	9·1	5	5·7
	Indirect micro-M.K.R. str.	111	50	30	60·0	5	10·0	15	30·0	61	53	86·9	7	11·5	1	1·6
	Direct micro-M.K.R.	157	67	49	73·2	7	10·4	11	16·4	90	78	86·7	9	10·0	3	3·3
	Direct micro-M.K.R. II	122	54	36	66·7	8	14·8	10	18·5	68	48	70·6	9	13·2	11	16·2
	Direct micro-M.K.R. str.	104	46	26	56·5	7	15·2	13	28·3	58	49	84·5	7	12·1	2	3·4
	Original M.K.R. Z.	128	61	38	62·3	8	13·1	15	24·6	67	41	61·2	9	13·4	17	25·4
	Modified M.K.R. Z.	120	55	37	67·6	8	14·2	10	18·2	65	61	93·8	2	3·1	2	3·1
	Modified M.K.R. Z. str.	101	44	24	54·5	5	11·4	15	34·1	57	53	93·0	3	5·3	1	1·7
Muller (M.B.R. II & M.B.R. Z.).	M.B.R. II	157	72	54	75·0	5	6·9	13	18·1	85	85	100·0	0	0·0	0	0·0
	M.B.R. slow	110	58	41	70·7	3	5·2	14	24·1	52	52	100·0	0	0·0	0	0·0
	M.B.R. Z.	157	72	60	83·4	4	5·5	8	11·1	85	82	96·5	3	3·5	0	0·0
	Indirect micro-M.B.R. II	119	55	18	32·8	13	23·6	24	43·6	64	59	92·2	5	7·8	0	0·0
	Direct micro-M.B.R. II	111	51	27	52·9	11	21·6	13	25·5	60	51	85·0	7	11·7	2	3·3
K.	Kahn (routine)	150	71	67	94·4	0	0·0	4	5·6	79	79	100·0	0	0·0	0	0·0
Sachs-Georgi and Sachs-Witebsky.	Original-Sachs-Georgi	74	23	12	52·2	4	17·4	7	30·4	51	51	100·0	0	0·0	0	0·0
	Modified (B.W.) Sachs-Georgi	328	152	101	66·5	18	11·8	33	21·7	176	162	91·5	11	6·8	3	1·7
	Ordinary Sachs-Witebsky	304	142	100	70·5	10	7·0	32	22·5	162	150	92·6	10	6·2	2	1·2
	Micro Sachs-Witebsky	161	80	32	40·0	11	13·7	37	46·3	81	73	90·1	5	6·2	3	3·7
W.	Wassermann	301	147	126	85·8	2	1·3	19	12·9	154	153	99·3	1	0·7	0	0·0

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Spinal fluid.—Both principal tests gave very good results, with a slight balance in favour of the centrifuge method; the sensitivity of the M.B.R. II and M.B.R.Z. respectively was 75% and 83·4% positives with 6·9% and 5·5% doubtfuls. Neither gave any false positives in negative fluids, but whereas the M.B.R. II gave no doubtfuls either, the M.B.R.Z. gave 3·5%. The M.B.R. slow—as was expected—proved of no additional value, giving a sensitivity of 70·7% positives and 5·2% doubtfuls, with no false positives in the controls. Indeed, our idea in investigating the M.B.R. slow at all, even in blood, was not the hope of better results; rather did we wish to see if it gave as good results as the other methods, as it might be useful to have a method that could be read next day rather than after four hours—a lapse of time that is sometimes awkward in laboratories, where the test might have to be performed in the afternoons.

The two micro-methods proved useless, as they only gave 32·8% and 52·9% positives in positive cases

Routine Kahn.

Blood.—The Kahn gave a sensitivity of 84·6% positives and 7·0% doubtfuls. There were neither false positives nor doubtfuls in the controls. The two cases quoted earlier (Nos. C40 and F20) in which the Kahn was negative and the Wassermann positive were both repeated, and the second result was positive. We might mention that we have tried a special, more sensitive antigen, kindly supplied us from the Derby Borough Mental Hospital, but though it has given us a higher degree of sensitivity, there has resulted some impairment of specificity. Reference should be made to the fact that we have accepted a "one plus" (Kahn notation) as a "one plus" and not as a "plus-minus", the latter being what Kahn recommends for reducing his notation to League of Nations standard. It is important to note how all the doubtful reactions occurred in positive cases (in the *League of Nations Report*, nine out of every ten of the doubtful Kahns were syphilitics), thus supporting Kahn's claim that a doubtful reaction is to be regarded in the light of a probable positive (180). The absence of false positives is equally important, though two observers (190, 203) report a small proportion of unspecific results. The procedure of incubating for 15 minutes at 37° C. before shaking for 3 minutes has been said (185) to increase the sensitivity by 5–7% without yielding any false positives. Even in the early days, Dudgeon (164), using Keinn and Wile's technique (210), records only one false positive.

Spinal fluid.—On fluids the test gave astoundingly good results. The sensitivity was 94·4%, and there were no false positives. As noted in the section on techniques the "doubtfuls" were returned as negatives. These numbered 3, of which two occurred in fluids from treated paralytics, these

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fluids giving positive reactions with one or more other tests; the third was also from a treated paralytic, but in this case no test gave a positive reading. These results are so satisfactory that we cannot support those who find the test unreliable (*e.g.*, 202), nor do we find the technique too difficult once practice has been obtained. Another observer (174) obtains much the same sensitivity as we do—94 5%.

Sachs-Georgi.

Blood.—As already noted by earlier observers (*e.g.*, 179), the original method gave a low degree of sensitivity, namely, 56·2% positives and 8·2% doubtfuls, with no false positives in the controls. The modified (B.W.) Sachs-Georgi gave a sensitivity of 77·0% positives and 8·9% doubtfuls, but 3·5% false positives. In the whole series, the modified test gave better results than it had done on the first 170 cases, and thus turns out to be even better than the Wassermann (see first report).

Spinal fluid.—On spinal fluid the tests were much less satisfactory. The original method gave 52·1% positives in positive cases, with no less than 17·4% doubtfuls, but no false positives in the negative fluids. The modified test gave a sensitivity of 66·5% positives and 11·8% doubtfuls, and 1·7% false positives.

Sachs-Witebsky.

Blood.—The good results obtained with this test at first were not maintained. In the whole series, the test gave a sensitivity of 65·2% positives and 11·6% doubtfuls, but neither positives nor doubtfuls in the controls. This means that the doubtful reactions can be taken (as in the case of the Kahn) as probable positives; adopting such a procedure would improve the sensitivity to the point of making it as good as that of Wassermann. Though one investigator considers it very reliable (206), most other observers find its sensitivity somewhat deficient, but its specificity excellent (70, 170, 201).

The direct micro-technique gave very poor results. The indirect method gave a sensitivity of only 58·7% positives and 11·6% doubtfuls, with 3·5% false positives in controls. The modification of this method (see techniques) gave even poorer results.

Spinal fluid.—The sensitivity of the standard test was 70·5% positives and 7·0% doubtfuls, with 1·2% false positives, thus showing the test to be better for fluid than for blood. The micro-test gave a sensitivity of only 40·0% positives and 13·7% doubtfuls.

The sensitivity of the test might have been improved had we first precipitated the globulins as for Kahn's test—a procedure on which one worker reports favourably (201).

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Wassermann (Modified Wyler No. 1).

Blood.—The Wassermann gave a sensitivity of 74·4% positives with 7·0% doubtfuls; the false positives numbered 1·3% (Cases A34 and A37). The doubtfuls were returned to us as either "doubtful in undiluted serum" or "doubtful in dilution of 1 in 2". Two of these doubtfuls, however (and one in spinal fluid), were "anti-complementary". It is interesting to note that of the 192 correct positive results, no less than 18 were returned as positive in dilutions of 1 in 4 and 1 in 3.

On the whole, then, the results were more than poor, and the deficient sensitivity was not even compensated by a complete specificity.

Spinal fluid.—Here the test proved more satisfactory. It gave a sensitivity of 85·8% positives with 1·3% doubtfuls. There were no false positives and only 0·7% doubtfuls in the controls (and this last was the "A–C" mentioned above).

Relative Values of the Tests.

A comparison of the various degrees of sensitivity and of specificity will be found in Charts I and II. It must be admitted at the onset that a legitimate criticism of these charts would be that some of these tests were not uniformly distributed throughout the whole series of cases, so that the results could not be called strictly comparable. Nevertheless we do maintain that they are partly comparable, if only on account of the way in which we have used the material available. As far as possible, the proportion of various types of cases was maintained at a nearly constant level from month to month; this means that a test that was used only in the earlier stages of this investigation was applied to the same proportion of non-syphilitics, syphilitics in Group C, untreated paralytics, early treated cases, etc., as was a test introduced later. That this precaution worked satisfactorily can be shown by comparing tests done on different cases, using the principle of a third, common test.* It is unnecessary to quote them here, but we have worked out several comparisons on such partial series, and have found the results to agree fairly closely with the relative merits of these tests as found from the charts based on the whole series, with the exception of the Sachs-Georgi and Sachs-Witebsky, both of which gave very uneven results.

One other point deserves special mention. The false positives of any test are calculated as a percentage of the total negative cases on which the test

* For example, suppose test A was performed on one series of cases and test B on a second series, whilst test Z was applied to both series. Work out the results of test A and test Z on the first series, and the result of test B and test Z on the second series. Next, note what proportional adjustment (*e.g.*, increase by 1/20th or diminish by 1/12th) would have to be made to the results of test Z in the first series in order to make them like the results of the test in the second series. Finally, make the same adjustment or correction to the results of test A before comparing them with those of test B.

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was done, *in this series*. The micro-M.K.R. and -M.K.R. II, however, were applied as exclusion tests to some 1,600 non-syphilitic cases; all the doubtfuls and over nine-tenths of the cases giving positive results were included in our series for comparison of tests, but approximately only one-tenth of those giving negative results were thus included. In other words, the *number* of false positives corresponds to hundreds of negative cases, while the *percentage* is based on only the non-syphilitics included in this series. This means that our percentage of false positive results with the M.K.R. is probably much too high. This, however, does not apply to the Muller, Kahn, Sachs, and Wassermann, as for them the series can be regarded as unselected. This should be borne well in mind when considering our results as a whole, for in the observations that follow we have made no attempt to take this factor into account.

Blood.—For sensitivity the M.K.R. reactions are undoubtedly the best, and there appears little to choose between them, as the differences shown are not (in view of the smallness of the series) of any great significance, except perhaps the difference between the modified centrifuge method and the micro-tests. The M.B.R. II and the M.B.R.Z. come next, while the M.B.R. slow and the direct micro-M.B.R. are slightly inferior. The routine Kahn results are nearly as good as those of the M.B.R. II and M.B.R.Z., and if we accept the doubtful results as positives, the sensitivity of the test becomes as good as that of the tests of the M.K.R. group. Then come the modified Sachs-Georgi, the Wassermann and the Sachs-Witebsky, but if we look upon the "doubtful" results of this last in the light of probable positives there is little difference between it and the Wassermann. Even neglecting these doubtfuls, the difference between the two is merely suggestive and not significant.*

The difference between the Wassermann and the Kahn is very suggestive and probably significant, while that between the Wassermann and the M.B.R. II, M.B.R.Z. and M.K.R. tests is certainly significant. For instance, the

* The importance of these various differences naturally depends upon the number of cases on which each test was done (the greater this number the less the likelihood of error), and has been calculated from the following simple formula for the standard deviation of a difference:

$$\sigma_{\text{diff.}} = \sqrt{\frac{p' q'}{n'} + \frac{p'' q''}{n''}},$$

where p', p'' are the two percentages, q', q'' the difference between these percentages and 100, and n', n'' the number of cases that the percentages represent. If the actual difference is more than once but less than twice the standard deviation we have regarded it as "suggestive", if more than twice, "probably significant", and if more than three times, "certainly significant". For example, take the sensitivity of the Wassermann and original M.K.R.Z. The difference is 89·8 − 74·4 = 15·4. The standard deviation is—

$$\sqrt{\frac{74{\cdot}4 \times 25{\cdot}6}{192} + \frac{89{\cdot}8 \times 10{\cdot}2}{106}} \quad \text{or} \quad \sqrt{18{\cdot}56},$$

i.e., 4·31. The actual difference, 15·4, is more than three times this figure, and is therefore significant.

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difference in absolute sensitivity between the Wassermann and the direct micro-M.K.R. II is more than four times the standard deviation.

It will be noticed that three tests give a complete specificity and two more a relative specificity (*i.e.*, with doubtful reactions only), but of these only two have a sensitivity of over 80%, namely, the Kahn and the M.B.R. slow. The Sachs-Witebsky could be included too if we accept its doubtfuls as positives.

Of the tests that give a sensitivity of over 90%, only the macro-M.K.R., the indirect micro-M.K.R. II and the indirect micro-M.K.R. str. give less than 6% false positives.

This suggests that the best exclusion tests are the M.K.R. reactions, especially the direct micro-methods, while as a diagnostic test the Kahn is to be preferred, the M.B.R. II standing midway between extremes of sensitivity and of specificity.

Spinal fluid.—Here the Kahn stands supreme, with the Wassermann and M.B.R.Z. tying for second place, none of these giving any false positives. The old macro-M.K.R. is the only other test that gives no unspecific results, notwithstanding a sensitivity of over 80%. The M.B.R. slow gives no false positives either, while the macro-M.K.R. II, the direct micro-M.K.R. and the Sachs-Witebsky give a fair sensitivity with less than 2% of unspecific results. The difference in sensitivity between the Kahn and the Wassermann is probably significant, and that between the Kahn and M.B.R.Z. is nearly significant and certainly suggestive.

Comments.

The superiority claimed for the Kahn over the Wassermann is thus well supported by our results, though one or two other observers would disagree (158, 166). The Kahn, in its routine form, does not apparently come up to the M.K.R. reactions in sensitivity, though one writer thinks it does (197). Another observer (173) finds close agreement between the M.K.R. and the Wassermann, but on the whole the consensus of opinion seems to be definitely in favour of the Kahn as an all-round test and the M.K.R. (or the Kline) as an exclusion test (23, 168, 191, 192), and with this we can well agree.

The results obtained here (separating those of 1931 from those of 1932) will be found listed side by side with those from some of the more important experimental series, in Table XVII. It must be understood, of course, that in so far as the material has differed from series to series, one cannot compare the sensitivity of any one test in one series with its sensitivity in another series; all that can be compared is the relative order of merit of the tests in the different series.

Although the recommendations of the Research and Clinical Sub-Committee urged the intensive investigation of these tests, yet the work done in this direction can still bear expanding. According to the Board of Control Report

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TABLE XVII.—*Comparative Results Recorded by Different Observers.* (*Blood.*)

Test.	League of Nations, 1928. 930 cases.		League of Nations, 1930. 1100 cases.		Chadiak. (?)		Campanacci. 700 cases.		Winwick, 1931. 150 cases.		Winwick, 1932. 250 cases.	
	Sensitivity. %.	Unspecific reactions. %.	Sensitivity. %.	Unspecific reactions. %.	Sensitivity. %.	Unspecific reactions %.	Sensitivity. %.	Unspecific reactions %.	Sensitivity. %.	Unspecific reactions. %.	Sensitivity. %.	Unspecific reactions. %.
Kahn presumptive . .	—	—	75·6	1	93·6 (3)	?	—	—	—	—	—	—
Kahn routine . .	60	0	63·9	0	—	—	—	—	—	—	84·3	0
Meinicke-M.K.R. . .	—	—	62·2 (2)	2·4 (2)	92·2	?	—	—	95·4	3·1	95·9 (8)	7 (8)
Muller-M.B.R. II . .	63 (1)	0·2 (1)	69·3	0·7	90·1	?	71	3·6	—	—	87	3
Sachs-Georgi . . .	42	0	—	—	—	—	53	0·9	75 (6)	4·6 (6)	81 (6)	3 (6)
Sachs-Witebsky . .	50	0	—	—	—	—	—	—	70	0	62	0
Wassermann-Wyler No. 1	42	0	54·4	0	57·7 (4)	?	49 (5)	0·7 (5)	82 (7)	0 (7)	70 (7)	2 (7)

(1) This was the old M.B.R.
(2) The technique used did not appear to be quite standard.
(3) Not certain that this was the presumptive test.
(4) Method not known.
(5) Method not known.
(6) Modified Sachs-Georgi.
(7) Modified Wyler No. 1.
(8) M.K.R. II.

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for 1931, only eight mental hospitals were doing flocculation tests. The M.K.R. was done on blood in 8 and on fluid in 4, the Sachs-Witebsky in 2 on blood and 1 on fluid, the Sigma in 1, the Sachs-Georgi in 2, the Kahn in 3 (with 1 doing spinal fluid), and the Vernes in 1. But over 40 were using the Wassermann. And as to the comparing of one new test with the Wassermann, this seems to have been of little value, because if a new test is introduced in the hope that it will prove better than the Wassermann, then the latter cannot justifiably be used as a check on the accuracy of the former. These tests cannot be satisfactorily investigated except by doing several at a time, even though due consideration be given to the clinical findings.

Conclusions.

It is now well established that the Wassermann reaction and the flocculation tests are two different ways of demonstrating the same phenomena, and that the former is, therefore, not a biologically specific test (55, 83, 116, 165, 169, 178, 180, 181, 211). That the technique of the Wassermann is cumbersome and almost out of reach of the smaller laboratories in which there is no full-time pathologist to supervise the test is undoubted; and as the comparison of flocculation tests with the Wassermann shows the latter to be very deficient in sensitivity, while being no more specific than some of the former, one wonders at the desperate clinging to the Wassermann that characterizes British syphilology. Even though it has been claimed (208) that the Wassermann can be improved to the extent of increasing its sensitivity by 20%, it still would not prove superior to the Kahn (routine and presumptive), and would almost certainly be less reliable than a combination of one exclusion with two diagnostic flocculation tests.

Three flocculation tests may sound formidable, but there is no doubt that they could be carried out in the average mental hospital laboratory with considerably more ease than could any one Wassermann method alone. It has been advocated by many that a flocculation test and a Wassermann should be done (51, 53, 55, 70, 93, 107, 178).* The arguments against the Wassermann have already been given, and the reason why one would recommend replacing it by *two* flocculation tests (making three in all) is that the performing of only two tests seems so utterly pointless. If a second test is used to confirm the first, then why do the first? On the other hand, if it is the first that is really being relied upon, why the second? Whether or not two tests might be of use in controlling the results of treatment, the fact remains that two are not of much more use than one as regards what is of interest to us here, namely, diagnosis.

* The *League of Nations Report* in 1928 recommended a Wassermann and a flocculation test: after the 1930 conference, however, although two tests were still advocated, no statement was made as to the advisability of the Wassermann being one of them. That is why Kahn considers that his presumptive and his routine tests satisfy these requirements.

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The difficulty of diagnosing cases that may have been treated long before admission to the mental hospital must be faced, especially in these days, when malarially-treated paralytics are walking the country, perhaps for years, before being re-certified into a mental hospital in which they may be totally unknown. But if three tests are done, one of which at least is specially sensitive and another completely specific, then the final combined result is more likely to show a high degree of sensitivity without loss of specificity.* This would also answer the objection that cases may occur in which one flocculation test may be negative while the Wassermann is positive.

Assuming, then, that the Wassermann is at last put to rest in the limbo of historically interesting experiments, the question is the choice of flocculation tests. As an exclusion test which will not necessitate the further testing of cases giving negative results, and which is easy, rapid, and capable of being applied to finger-blood, we have the micro-M.K.R. II and the Kline (168, 191, 192); this latter we have not tried yet, but we hope to do so before long, and compare it with the M.K.R. on a large series of cases. If an exclusion *macro*-test is required, the presumptive Kahn (another test we are expecting to experiment with in the near future) would, by all accounts, appear most suitable. As the specific control, the routine Kahn seems second to none, and it has the advantage that, like the Wassermann, it can be used quantitatively. The third test could profitably be the M.B.R. II, a test that maintains a nice average between the sensitivity of the M.K.R. and the specificity of the Kahn. If the micro-M.K.R. II were used first and happened to give an unsatisfactory result, and confirmation were sought from another test from the same group, a macro-M.K.R. could be put up in a few minutes, read as a micro-test after one hour and as a centrifuge test after half an hour. As regards spinal fluid, there seems less need for three tests, and here the Kahn and the M.B.R.Z. would seem eminently suitable.

Although the finer details of the position concerning these flocculation tests will only become clearly defined when the mass of material to be found in mental hospitals has been more extensively utilized, the results of our investigation—incomplete though it may still be—clearly support the advisability of adopting these tests for the improvement, as well as the simplification, of our diagnostic methods.

We would thank our Medical Superintendent, Dr. F. M. Rodgers, for permission to use hospital material, and for granting certain facilities for carrying out the work. Our thanks are again due to Drs. Gifford and Aldred, from whose cases much of the material was obtained, and to Dr. Bain, Medical Superintendent of the Derby Borough Mental Hospital, for kindly supplying us with a sample of a more sensitive Kahn antigen. And finally, no statement of our

* To say nothing of the fact that these flocculation tests can be carried out at less cost than the Wassermann.

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indebtedness would be complete without mention of the valuable and ever-willing help afforded us by Mr. J. Scaling, our Technical Laboratory Assistant.

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A very complete list of references will be found at the end of Kahn's two books (67 and 180) and in Kline's book (181).

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SOME REMARKS ON THE TREATMENT OF GENERAL PARALYSIS BY DIATHERMY.*

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ACTING on the theory that hyperpyrexia is the effective agent in the treatment of general paralysis by malaria, Neymann and Osborne (1) experimented on dogs to see whether, by means of diathermy, sufficient heat could be generated to raise the temperature of the experimental animals to a high degree without injurious results.

This being found practicable, they devised a method of applying diathermy to the human subject, with the same purpose in view.

They found that they were able, by using a suitable set of electrodes, and by thorough insulation of the individual, to raise the body temperature to any height, and, moreover, to keep the temperature under definite control.

Of 50 cases of general paralysis so treated by them (2), 12, or 24%, returned to their former occupation; 13, or 26%, improved; 15, or 30%, were arrested clinically; 10, or 20%, were non-arrested; and there were no deaths directly due to the treatment.

Wilgus (3) reported that in a series of 97 patients treated with diathermy 55% were much improved, and, of these, 18% were already at home and more would follow, 17% were slightly improved, and 23% were unimproved. Six patients died as a result of the progress of the disease.

More recently Bamford (4) stated that he had ceased treating general paralysis by diathermy, as there was no evidence, in his opinion, that it was any more effective than malaria in producing remissions.

He treated 13 cases, one of whom improved clinically sufficiently to be fit for discharge. Of the remainder, 9 received no benefit and 3 are dead. His conclusion was that the treatment could only be carried out in specially selected quiet and co-operative patients, and that there was considerable danger from burns.

Prior (5) states that he treated 3 women and 9 men by diathermy, and that 5, or 42%, were much improved, and 3, or 25%, improved.

As this method of treatment was still very much in the experimental stage,

* A paper read at the Autumn Meeting of the Irish Division, November 3, 1932.

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I tried to gather some information from a study of the charts of my malaria-treated patients, in order to arrive at some conclusion, if possible, as to what degree of hyperpyrexia should be aimed at in each case, and for how long this temperature should be maintained. This study was not helpful, so I decided to keep each patient at a temperature between 104° and 106° for four hours, and to give two or three treatments after apparent remission had taken place.

The preparation of the patient and bed is as follows :

In the evening prior to day of treatment the patient is weighed, and on the following morning given a glycerin enema.

The bed is prepared by placing over the mattress a large waterproof sheet, and on top of this two blankets. On these the patient lies, clad only in a pair of cotton shorts, which have an opening posteriorly to permit of the entrance of a rectal thermometer.

The patient is covered with four blankets, then a waterproof sheet and two more blankets.

All these coverings are securely tucked in at the sides and lower end of the bed.

It is advisable to have all blankets thoroughly warmed before the bed is made up.

To prevent the pillows being soaked with sweat, waterproof slips are put on below the usual linen ones.

The electrodes, of which there are three—one each for the back, abdomen and chest—can easily be made. Those in use in this hospital at present consist of brass gauze, twenty mesh to the inch, securely attached with cotton to a backing of quarter-inch sponge rubber sheeting. The electrodes are kept *in situ* by means of a specially designed woollen jacket.

Neymann gives a definite warning of the risk of burns. Bamford, as has already been mentioned, found this risk so serious that he has temporarily discontinued this method of treatment.

I have found this risk negligible ; on several occasions small areas of skin were observed to be reddened, and once or twice a slight blister has been found after the electrodes have been removed. In no case has there been a severe burn, and this immunity is to be attributed to the use of a good lubricant, and to the careful adjustment and fixation of the electrodes by the nurse in charge.

All patients are very uncomfortable under the treatment, and many are very troublesome. All are therefore given encouragement, and omnopon-scopolamine is given hypodermically where necessary. All are given as much water as they wish. Many of these patients, after the third or fourth treatment, begin to realize the benefit they are deriving, and for the remainder of the course co-operate very well and give no trouble.

In all reports of this type of treatment that I have read I have not observed any record of respiratory complications. Few of the patients treated at this hospital have failed to give cause for concern on this point. Periods of apnœa accompanied by a blueing of the upper half of the face have been noted and in one case respiration of the Cheyne-Stokes type was observed at each treatment. One case, the third of the group treated, a female patient who was progressing exceedingly well under this treatment, during the actual subsidence of the temperature ceased breathing. Artificial respiration and other

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restoratives succeeded, after two hours, in re-establishing respiration, but her heart gradually weakened, and she died four hours from the time when respiration first failed. I may state that an attempt had been made about a month previously to treat this patient with malaria. She almost died during the first rigor, and this line of treatment was terminated. Permission for a *post-mortem* examination was not granted.

Watchful care is required once the temperature has reached 104°, as even after the current has been turned off the temperature continues to rise, and that, too, very rapidly. Frequent use of the clinical thermometer is essential. In a recent case the temperature shot up to 106·8°. In twenty minutes it was reduced to 102° by quickly wrapping the patient in a succession of sheets wrung out of cold water. Not the slightest ill-effect followed.

Sweating is profuse, and in spite of the large amount of fluid taken, loss of weight is marked. The average loss of weight in the group of cases treated was approximately 4 lb.; the greatest loss on any occasion was 10 lb.

All patients are confined to bed for three clear days following the treatment, and, during this period, the greater part of the weight lost is regained.

Neymann gives his cases treatment bi-weekly. Bamford adopted the same rule, but one of his cases received treatment on alternate days for a course of sixteen elevations of temperature above 104°. My patients receive treatment about once in ten days, and, during this interval, loss of weight has been regained and frequently additional weight put on. The average increase in weight between each treatment has been 2 lb.

The results to date of the patients treated at Purdysburn are shown in the following table:

Type.	Number of cases.	Remissions and discharged.		Improved.	Not Improved.	Dead.
		Employed.	Not employed.			
Expansive	6	3	1	1	..	1
Depressed	6	1	2	1	..	2
Demented	10	3	2	..	2	3
Congenital	1	..	..	..	1	..
Total	23	7	5	2	3	6
		12				
Percentage	100 approx.	52		8·8	13	26

Of the 7 patients discharged and at present employed, 2 females have re-commenced their household duties. One man has now resumed his occupation as a tram-driver, a second has returned to his duties as a clerk, a third is once again a coal vendor. The remaining two are working as general labourers. Five are unemployed, though when resident in the hospital they were quite energetic and useful workers. The first discharge took place eleven months ago, and the most recent ten days ago.

Both the cases who are improved but still resident are good out-of-doors

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workers on the mental hospital estate; they are still unsuitable for discharge, owing, in one case, to the fact that he continues to be reminiscent of his experiences with Adam and Eve in the Garden of Eden, in the other to his continued annoyance from the " chatter " going on in his head.

Three cases are unimproved mentally. Two of these show good physical improvement, while the third—a congenital case—is rapidly deteriorating.

Of the six cases who have died, one death was directly due to the treatment, as I have already described. The others occurred as the result of the progress of the disease.

At this point, by way of contrast, the results I have obtained by the employment of malaria may be stated:

Total.	Discharged.	Resident in hospital.	Dead.
Cases 222	95	39	88
Percentage	42·8	17·5	39·6

Of the 95 cases which were discharged, 73 have been traced and show the following grouping:

Total discharges traced.	At present employed or fit for employment.	Unfit for employment.	Dead.
Cases 73	37	19	17
Percentage	50·6	26	23·4

If we assume the same percentage of grouping for the 22 cases discharged and remaining untraced, then we may consider that out of 95 cases discharged 48 are at present employed or fit for employment, 24 are unfit for employment, and 22 are dead.

Therefore, of the total cases treated the present state may be reckoned as follows:

Discharges	32·4%	21·6% fit for employment. 10·8% unfit for employment.
Remaining in hospital	17·5%	
Dead	50%	

As with malaria, the cases treated by the new method have been unselected. The diagnoses made clinically are confirmed by an examination of the blood and of the cerebro-spinal fluid.

Following the termination of the course of treatment the Wassermann reaction of the blood remains unaltered. Re-examination of the cerebro-spinal fluid is being deferred for the present, as it has been observed that improvement in the cerebro-spinal fluid following treatment by malaria is usually delayed.

Summary.

(1) Twenty-four cases have been treated by diathermy.

(2) 52% obtained a clinical remission.

(3) Present results are superior to those following treatment by malaria.

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(4) The mechanical control of the hyperpyrexia makes this method of treatment safe. Risk of burns is negligible if ordinary care is observed.

(5) Respiratory complications have been a feature and caused one fatality.

(6) From the paucity of the number of cases treated and the short time that has elapsed since the remissions developed, a definite opinion cannot be given of the value of this method.

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THERAPEUTIC MALARIALIZATION OF GENERAL PARALYTICS IN THE TROPICS.

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DURING the last few years, in which pyretotherapy has figured so largely in the treatment of general paralysis of the insane, the question must have arisen in many minds whether general paralysis occurs in communities where malaria is indigenous, and if so, whether satisfactory results would be obtained from further malarialization on artificial lines.

The Central Mental Hospital of the Federated Malay States has over 2,500 patients in residence, and draws its cases from the whole of the Malay Peninsula. Many races are represented besides the native Malay and associated races—Chinese, Japanese, Siamese, Indian, etc.—and malaria is indigenous over the whole territory.

Fifty-six general paralytics were treated at this hospital, the cases being drawn from all nationalities, and the following is a summary of results :

Out of 56 patients inoculated, 1 was " cured " (discharged), 2 were markedly improved (discharged), 1 slightly improved, 6 not improved, 2 died of malaria.

Forty-two failed to contract malaria, and no improvement was noted among any of these such as might be attributed to " apyrexial malarial therapy."

Of those cases that failed to contract, all 42 were reinoculated at least once, 29 were reinoculated thrice intramuscularly, 5 were reinoculated four times intramuscularly, and 10 were reinoculated intravenously after the first intramuscular attempt.

The other 12 cases commenced rigors within from 7 to 18 days of the first intramuscular injection with the exception of one case which was reinoculated after 21 days, the original rise of temperature having proved abortive ; 11 of these cases remitted spontaneously, only 1 requiring quinine, and that the " cured " case.

All cases were males and were selected on strong clinical evidence in the first place, the diagnosis being confirmed later by the serological findings before inoculation.

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No case was chosen with pathological changes less than—Blood Wassermann, ++ ; blood Kahn, ++ ; cerebro-spinal fluid Wassermann, ++ ; cerebro-spinal fluid globulin, + ; cerebro-spinal fluid cells, 10.

No concurrent anti-luetic drug treatment was employed and, although the histories were defective, it is unlikely that any of these cases had received such before admission.

Case.—K. S. K—, an educated Chinese of the "towkay" class, a commercial man of some means, could speak English and Malay as well as three dialects of Chinese, and possessed an extremely interesting and forceful personality. Shortly after admission he exhibited fatuous exaltation and well-marked slurring articulation, but later, towards the close of his convalescent period, these defects disappeared, revealing a character unusually interesting as compared with the average found in an Asiatic mental hospital.

On examination the pupils were circular, but slightly unequal, the right being the larger, and they reacted equally but very poorly to light, especially consensually.

Accommodation and reaction on accommodation seemed to be normal so far as it was possible to ascertain in a patient of extremely restless habit and poor attention. A patch of integument over the bridge of the nose spreading for half an inch on to the forehead was completely analgesic and apparently anæsthetic. There was no facial asymmetry, but the facies lacked the vigour of expression that might have been expected from the amount of euphoria displayed.

A well-marked "trombone" tremor of the tongue was present and he appeared to have a little difficulty in swallowing. Articulation, as already stated, was definitely dysarthric and slurring in quality. Most superficial reflexes were accentuated and the tendon reflexes diminished, in particular the knee-jerks, while both plantar reflexes were extensor. The gait was extremely unsteady and the patient swayed on standing, even with his eyes open. The blood Wassermann and Kahn tests showed a double +, the cerebro-spinal fluid Wassermann was double +, the globulin markedly increased and the cells numbered 25 per c.mm.

The mental characteristics of this man were most interesting, as deterioration was so rapid. Within a few weeks he lost his knowledge of all languages except his mother tongue, and in the reverse order to that in which they had been acquired. English, the school-taught language, disappeared rapidly; Malay, the *lingua franca* of these parts, which is picked up in infancy, more slowly; and lastly, the other Chinese dialects akin to his mother tongue. When he recovered he regained all four in the reverse order again—that is, in the original order in which he had first learnt them. In this polyglot corner of Asia the losing and regaining of tongues forms a very useful guide to the diagnosis and prognosis of the psychoses, and bears ample witness to the truth of the law of reverse degeneration or dissolution (1).

His euphoria was intense and his grandiose delusions superb. Thus he owned half the wealth of the country, and all other towkays had to submit cheques to him before they could be honoured at the bank. He was the first to own an aeroplane in these States and now possessed a fleet of several hundred, some of which were so fast that he could take his family to China for week-ends. His wives, of which he possessed four, as well as four hundred concubines, were all royal princesses of the ancient Imperial family and each had a separate palace in Kuala Lumpur, the capital of the Federated Malay States.

He received 4 c.c. of benign tertian blood well loaded with sporocytes, and his first rigor commenced fourteen days later, after an initial fever of four days' duration. He raised a marked reaction and sustained fifteen rigors, some of them being quotidian, though other forms of parasites were never found in the blood-smears. On the twenty-fourth day his condition became so weak that it was deemed

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advisable to exhibit quinine, and he was put on Sinton's treatment, which effectively stopped all fever and acted as a remarkable tonic.

Already, during the active stages of the treatment, his delusions had progressively diminished, and now he was sadly shorn of much of his former magnificence. Gone were all his aerial fleets and most of his wives, though he still remained a fairly rich man. It took another three weeks before he relinquished all claims to excessive wealth, and he never entirely lost his abnormal self-confidence and somewhat hilarious *bonhomie*. He did, however, leave the institution within the remarkably short time of three months from the date of inoculation, capable of taking his place in the business world again and of conducting his affairs without undue embarrassment to his family ; and to date, nearly a year afterwards, has remained fairly successful in spite of the worst trade depression known in the East.

So much for the single cure out of the 56 ; the other cases were not sufficiently distinctive to warrant comment. It is at once obvious that these results are extraordinarily poor as compared with those usually obtained at mental hospitals in Europe and other temperate climates.

Thus, three only were discharged out of a total of 56 cases treated, a recovery-rate of 5·4% as against an average of about 25% for Europe.

Meagher (2) gives 25% as the figure collected from 11 mental hospitals in England for the year 1923, and as much as 26% from 22 mental hospitals in 1924. Even taking figures from mental hospitals where therapeutic malarialization was not practised for the year 1927 the recovery-rate is as high as 2% (3). This author (quoting Dr. Clarke of Whittingham) points out (4) that remissions met with in untreated cases denote a transitory improvement mitigating the value of this 2%, whereas the 25% discharged after malarial therapy form a much more permanent type of " cure."

It must here be stated that the same holds true of the other two out of the three cases discharged from the Central Mental Hospital ; they were removed by importunate relatives, and hardly came up to the standard usually accepted as fit for discharge, so that the real figure for percentage of recoveries should rather be 1·8.

Owing mainly to difficulty of access to the literature, the writer has not been able to compare results with any that may have been accumulated in other tropical countries, though two cases of " neuro-syphilis " and one of manic-depressive insanity were inoculated with malarial blood at the Ranchi Mental Hospital (5) in 1930—it is stated with no improvement.

The question then arises as to the reason for such poor results attending malarial therapy in a malario-indigenous country. In the first place, regarding the correctness of diagnosis and the degree of efficiency of treatment : the writer has shown, he trusts, that sufficient care was taken to render the diagnosis certain before choosing cases for treatment, while, in the actual treatment itself, a like care was exhibited to ensure efficient inoculation. Thus blood was always taken from donors about half an hour after a rigor and injected without delay, a sample being examined to ascertain its malarial

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content. If this sample was not loaded with parasites the recipient was reinoculated at a later date.

Five c.c. of blood were employed on every occasion, and great care taken to ensure that antiseptics should not come into contact with the needle, syringe, or the skin of either donor or recipient. Benign tertian, subtertian, mixed tertian and malignant varieties were employed, and all were taken from "roaring cases of rigorous reaction." In no case had the donor received any quinine. Working with the above precautions in this warm, humid climate the chances of death of the parasite were almost *nil*.

One point which may perhaps account for a small proportion of failures is the disadvantage the worker is under in Malaya, as in other less advanced countries, of not being able to obtain satisfactory histories; indeed, in most cases no history at all is forthcoming. This militates against efficient selection of suitable cases for malarial therapy both with regard to the stage of advancement of their dementia and the possibility of considerable previous malarial infection. The Schilling index, however, proved useful in rejecting some of the more advanced cases; a few with an immature neutrophile leucocytosis of as much as 15% were rejected, with others, by this method.

The assumption, however, that one is drawn to is that artificial malarialization fails because of the large previous infection of those patients who have been subjected to it most of their lives. This is supported by the fact that K. S. K—, the only really successful inoculation, although born in this country, had returned to China frequently, and, coming of a better class than the other patients, would not be likely to have contracted malaria so frequently.

The validity of this hypothesis depends very much upon the question whether an attack of malaria confers immunity against subsequent attacks. Manson Bahr (6) affirms that it has been shown that the natives of malarious districts do acquire immunity to this disease, and that they acquire it from repeated and persistent infection in childhood. It is a matter of common observation in malarious countries that many natives who have suffered from ague in childhood or early life can expose themselves to infection with a remarkable degree of impunity, while many immigrants to the country who suffer severely during their first year or so are later free from the disease. Many authorities, including Schuffner (7), conclude that differing degrees of immunity to malaria may be found, and he mentions *immunitas sterilisans* and relative immunities. This certainly appears to be the case in artificially produced malaria, second and third inoculations being notoriously difficult to render effective if the patient has responded at all to the first inoculation, while Rudolf (8) states that the degree of immunity varies directly with the number of inoculations.

There are many other indigenous fevers, in Malaya at least, that might

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be supposed to affect the course of general paralysis, most of them being themselves spirochætal, such as Weil's disease, 7-day fever, yaws and Sodoku or rat-bite fever, which latter has been used successfully in pyretotherapy (9).

But is general paralysis, in consequence of all this, less prevalent in the East than in the West? As far back as 1923 the average percentage of admissions to all hospitals in the Netherlands East Indies was as follows:

Europeans	9·1
Malays and Chinese	2·9

while the figure given at that time for Prussia was 9·5.

Fletcher (10) states that "Though syphilis is widespread in most tropical countries, the parenchymatous affections of the central nervous system, *viz.*, tabes and G.P.I., are comparatively rare, at any rate among the native population."

Castellani (11) expresses a similar opinion. Kirk (12) as recently as 1931 writes: "Parasyphilitic diseases, as locomotor ataxia and general paralysis of the insane, are very rarely met with in the tropics."

But our experience at the Central Mental Hospital so far as general paralysis is concerned has been quite different. As against the European figures of 4·2% to 5·7% (average percentage on direct admissions to mental hospitals), this hospital gives an average figure of 4·9% during the last 15 years, while the later records of the Singapore Mental Hospital, which, however, draws its cases much more largely from among seafaring men and from overseas shows 8% for the year 1931.

Tabes is, undoubtedly, extraordinarily rare in Asia; de Lange reckons it among the rarest of diseases in Java; Montel has only seen one case at Saigon among 100,000 patients in 15 years, and the records of the Central Mental Hospital do not show a single case in 25 years.

Another factor to be reckoned with among the peoples of Asia in considering their reactions and immunity to the toxins of disease is that of idiosyncrasy. This phenomenon, comparatively rare at home, is more than common here; it is in fact a racial characteristic, and its manifestations are remarkable in the extreme, especially among the Chinese. Thus the well-known tolerance for opium, due possibly to centuries of selective breeding, goes hand in hand with the equally remarkable intolerance of iodine, ipecacuanha and belladonna, while opium addicts are so intolerant of mercury in any form that a dose of 5 gr. of grey powder has been known to cause necrosis of the lower jaw.

Recognizing, therefore, some degree at least of metabolic differentiation in the physiology of the Oriental, one is led to be cautious in drawing conclusions, but it seems to the writer permissible to conclude that the percentage of general paralytics in the Malay States would be even larger were it not for the minimizing influence of malaria, and, as will be shown later, so many other antigenous affections and diseases.

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But there is yet another factor that has to be considered in contemplating the effects of frequent febrile diseases on the course of syphilis contracted by a native population lower in culture and hygiene than the average found in Europe, and that is the one of selective survival. Most general paralytics in the East have maintained their syphilis in spite of all these natural inoculations, and are therefore less amenable to any form of treatment ; either their natural resistance to syphilis is unusually low, or their particular strain of spirochæte is of an unusual virulence.

Consideration of the dermotropic and neurotropic lesions of syphilis as found in Asiatics confirms these conclusions. Organic lesions apart from the central nervous system, such as luetic alterations of the cardio-vascular system are not common, while syphilides of the skin are extraordinarily frequent in the East. This is in keeping with the Oriental's strong predisposition to ulceration and inflammation of the skin at all times. When it is remembered how large a part the skin plays in the formation of antibodies, especially in a climate where pigment and sunlight abound, it is not difficult to understand why the cases that come for treatment are only those that have persisted in spite of all *materia medica naturæ*.

Harrison (13), quoting Brown and Pearce's experiments, states that the severity of any phase in syphilitic manifestations is influenced by the intensity of reaction in the previous phases. He maintains that an attack of syphilis produces a resistance which is proportional to the amount of tissue reaction that occurs, and with special reference to syphilides, he concludes that this factor may contribute to the holding in check of general paralysis among uncivilized communities.

The old theory as to the dermotropic and neurotropic manifestations of syphilis being due to two varieties of the *Spirochæta pallida* appears to have fallen out of favour. Collier and Adie (14) support the more modern and now more generally accepted view that the cause of the variation lies in the victim rather than the virus. Eddison (15), pointing out that general paralysis tends to occur in the type of patient with a scanty history of earlier syphilitic lesions, maintains that involvement of the reticulo-endothelium by the syphilitic virus constitutes one of the factors which determine whether a given syphilitic patient will develop paralytic dementia ; but Bruetsch (16) affirms that the immediate tissue reaction of the body to the malarial plasmodium consists in a stimulation of the reticulo-endothelial apparatus, leading to a new formation of macrophagic tissue in various organs. Bruetsch further states that in therapeutic malaria the individual cells of the reticulo-endothelial system found in the blood-stream, the histiocytes, are mainly derivatives of the specific endothelium of the spleen, marrow, etc., and, to a minor degree, the common capillary endothelium is engaged in the formation of intravascular phagocytes. In general he concludes that " Therapeutic malaria produces an activation of

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the mesodermal tissue, in which the stimulation of the histiocytes and the activation of the undifferentiated mesenchymal cells are outstanding features."

May we not, then, in malarialized syphilides, and in cases of general paralysis + malaria + dermatitis, visualize large quantities of blood surcharged with histiocytes being drawn into the congested dermis, there to be opsonized by "quanta" of tropical sunlight?

Power (17) says that "At all events the appearance of a rash is of good omen as regards the subsequent development of paresis, and this fact is worthy of very serious consideration from a possible therapeutic standpoint. Might not a primary spirochætal disease, such as yaws, exert a beneficial influence on general paralysis?" Apparently we fail in our pyretotherapy in the East, because Nature, so prodigal and yet so ruthless in the birthplace of mankind, has, relenting, anticipated us with her own remedies.

Finally, one other consideration of great importance—the lateness of most cases seen by the practitioner in the tropics, whether in the general, hospital or institutional field. The mental hospital in Asia fortunately does not suffer in the least degree from the stigma attached to such places in the mind of the people of Europe, but it does experience humanity's other great failing—procrastination—to a much greater extent, so that when we consider that the native patients, for the most part, apply for medical assistance only on account of serious and far advanced stages of disease, their number acquires an entirely different significance.

For the present, until a larger series of cases can be examined or correlated, the writer is forced to the following deductions:

Conclusions.

(1) General paralysis of the insane is as prevalent among the population of the Malayan peninsula as among that of Europe.

(2) This prevalence is, moreover, even less than it would otherwise be on account of—

(i) The retarding effect of concurrent protozoal infections.

(ii) The tendency of the Oriental's metabolism towards dermotropic rather than neurotropic lesions in all spirochætal diseases.

(3) General paralysis of the insane responds very much less to anti-malarial treatment in Asia, because these neurotropic cases represent the most developed of the cases of lues, *i.e.*, cases which have persistently resisted the action of exogenous and endogenous antibodies.

(4) It is extremely difficult to obtain effective malarial inoculation in Asiatics of the coolie class who have been brought up in a country where malaria is indigenous, and who may be presumed to have acquired some degree of immunity.

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THE TREATMENT OF THE VOLUNTARY BOARDER.

THE RETREAT, YORK, 1891–1930.

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FOREWORD.

THE following paper is the result of experience gained during two and a half years' work at The Retreat, York.

It was prepared at the time that public attention was being focused upon the Mental Treatment Act, 1930. One of the most striking features of that Act was the provision that any person—pauper or otherwise—could be received into any mental hospital by applying for admission voluntarily. The removal of the bar of certification was widely welcomed ; this welcome was believed by the writer to be partly a sentimental one. So little was known of any of the legal and medical difficulties which the voluntary boarder system had produced during the forty years it had been in fairly constant use in the registered mental hospitals, that these problems were seldom referred to when the Mental Treatment Act was under consideration.

Neither the statistics of the Board of Control, nor those published annually by the registered mental hospitals themselves, contained any clear hint of these drawbacks. But to the medical officers in these institutions difficulties in the system were constantly apparent.

A review of the writer's experiences of these problems seemed therefore a profitable inquiry. The system had been said to work well. Were its drawbacks capable of classification and elucidation ? Was the commonly held belief that better results were obtained as the result of treatment of the voluntary patient than of the certified case justified ?

The system was there, but its problems had never been worked out in detail. So far as the writer knows, no investigation of the kind attempted in these pages had been made. The problems presented were known to the asylum officers, but had never been analysed.

In a review of this type, a certain amount of history of the system seemed necessary. No originality is claimed for this, although the actual facts given are not (so far as the writer knows) included in any text-book, and the sources have been the annual reports of the Board of Control from 1852 onwards.

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The voluntary boarder system has long been in much more extensive use in Scotland, but as the writer has no personal experience of the Scottish system no further reference is made to it.

Section I.—History.

The Mental Treatment Act of 1930 legalized the reception into any mental hospital in England and Wales of any person who applies voluntarily for admission. Prior to January 1, 1931, reception upon the voluntary basis was only possible into the licensed houses and registered mental hospitals.

After the Lunacy Act of 1774 a doctor's certificate of a patient's unsoundness of mind became necessary before any person was admitted into an asylum or licensed house. After the passing of the 1828 Act two certificates were necessary, except in the case of pauper patients.

The Lunatic Asylums Act of 1853 enabled any patient who was fit to be discharged from a licensed house to remain there as a voluntary patient for a further period provided that two Commissioners in Lunacy gave their consent.

By the Lunacy Acts Amendment Act of 1862 any person who had during the previous five years been detained in any type of mental hospital might enter a licensed house as a boarder, provided that he had himself written for the permission of two Commissioners. The Commissioners in Lunacy regretted that the opportunities were still so restricted, and they sought legal advice on the point as to whether this arrangement had to be restricted to the licensed houses. They wished it to be extended to the registered mental hospitals. Counsel's opinion was taken, and it was his view* that if a person previously detained desired to enter a registered mental hospital for treatment he might be so received. An agreement of this kind might be properly entered into with the superintendent.

Before the passage of the Lunacy Act, 1890, only three of the registered mental hospitals appear to have availed themselves to any large extent of these opportunities. These were the Manchester Royal Hospital at Cheadle, Bethlem Royal Hospital, and the Holloway Sanatorium (opened in 1885).

The Select Committee of the House of Commons, which was appointed in 1877 to inquire into " the operation of the Lunacy Law so far as regards the security afforded by it against violation of personal liberty ", reported that " the system of admitting boarders has answered well ". Further care in notifying all voluntary admissions was urged, but the Commissioners did not approve of any extensions in the existing law, and believed that in doing so there would be a fear of inconveniencing the truly insane, and of filling the licensed houses with mere drunkards.†

* *17th Report of the Commissioners in Lunacy*, 1863, p. 108.
† *33rd Report of Commissioners in Lunacy*, 1879, p. 137.

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The Commissioners were alarmed at times between 1877 and 1890 because it seemed that on occasion persons who were "decidedly insane and certifiable"* were being illegally kept as boarders. A number of such instances are referred to in their annual reports.

The Lunacy Act, 1890, repealed all previous legislation. It enabled *any* person, not merely those who had previously been certified, to enter a licensed house as a boarder after the Commissioners' consent had been received. It implied that similar facilities were available for an intending boarder to enter any one of the registered mental hospitals, though this was not explicitly stated. The Rules issued by the Commissioners in connection with the Act provided for boarders in the registered mental hospitals. So far as the ten hospitals (other than the three previously mentioned) were concerned, no steps had been previously taken to offer voluntary admission for any patient. Shortly after the passing of the 1890 Act all the registered mental hospitals began to admit boarders. The number of these admissions was at first very small, but as the figures quoted show the value of the voluntary system has been increasingly appreciated.

Section II.—General Statistics.

From January 1, 1891, to December 31, 1930, there were 1,165 admissions of voluntary boarders into the Retreat, York.

The appreciation of the possibilities of this form of admission has gradually increased. No more than twelve such admissions took place before 1900, but the number now reaches seventy or more annually. In each year until 1923 more certified than voluntary cases were received, but since that date the number of the voluntary admissions has exceeded that of the certified.†

* *44th Report*, 1890, p. 100.

† The following table shows the actual percentages of voluntary and certified admissions to *all* registered hospitals in England and Wales from 1892 to 1930. Figures for 1915–1919 are unobtainable:

	Voluntary.	Certified.		Voluntary.	Certified.
1892	17	83	1910	19	81
3	19	81	1	21	79
4	19	81	2	20	80
5	20	80	3	22	78
6	17	83	4	28	72
7	15	85			
8	16	84	1920	32	68
9	16	84	1	32	68
1900	14	86	2	33	67
1	15	85	3	35	65
2	16	84	4	42	58
3	17	83	5	44	56
4	15	85	6	50	50
5	15	85	7	50	50
6	19	81	8	54	46
7	19	81	9	51	49
8	19	81			
9	16	84	1930	55	45

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The figures for the admissions to *all* the registered mental hospitals (including the Retreat) are similar, except that the excess of voluntary over certified admissions at the registered mental hospitals as a whole only began in 1928.

Of the 1,165 boarders admitted, 70 have been excluded from consideration here. Any patient admitted for purely medical treatment, any person spending some time at the Retreat as a relative of the patient, recovered patients wanting a holiday (and in no sense relapsed) have all to sign the voluntary admission request, and all such admissions are notified to the Board of Control. But such cases must obviously be deleted from a consideration of the ordinary voluntary boarder and his status.

1,095 cases are considered.

336 men and 367 women were admitted once.

71 men and 63 women were admitted on two or more occasions, as follows :

	Male.	Female.	Total admissions.
Admitted twice	49	41	180
,, on three occasions . . .	11	11	66
,, ,, four ,, . . .	5	3	32
,, ,, five ,, . . .	2	3	25
,, ,, six ,, . . .	1	1	12
,, ,, seven ,, . . .	1	2	21
,, ,, eight ,, . . .	1	..	8
,, ,, nine ,, . . .	1	..	9
,, ,, eleven ,, . . .	..	1	11
,, ,, twenty-eight occasions .	..	1	28
	71	63	392

The 1,095 admissions relate therefore to 837 persons.

It seems best to deal at this stage rather with the form of illness than with the persons as such. Reference is made later to single and multiple admissions. The figures and types of mental illness represented are shown in Table I.

Table II shows the result of treatment in the 1,095 cases, whether " Recovered ", " Relieved ", " Not improved ", " Died ", " Still here " or " Certified ".*

One must mention a further point in connection with the multiple admissions. Had the fees of the hospital been less, the numbers of these

* The results of treatment of persons who were certified and transferred to other hospitals are tabulated in the "Relieved" or "Not improved" columns. "Certified" only refers to those boarders who were certified at the Retreat and remained there.

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TABLE I.

Melancholia*	412	38%
Manic-depressive psychosis*	140	13%
Schizophrenia	81	7%
Mania*	72	7%
Anxiety states and hysteria	66	6%
Confusional states	60	5%
Alcoholism	52	5%
Senile dementia	45	4%
Obsessional neurosis	26	2%
G.P.I.	25	2%
Paraphrenia	25	2%
Psychoses associated with organic disease	24	2%
Paranoia	18	2%
Emotional mental deficiency	14	1%
Morphinism	8	1%
Hypochondria	7	1%
	1,075	98%
Doubtful diagnosis†	10	1%
	1,085	99%
Mental deficiency‡	6	1%
Epilepsy‡	4	..
	1,095	100%

* Melancholia, mania and the manic-depressive psychosis have been differentiated throughout. The writer believes that they form part of one great group, but he has purposely discriminated them. "Melancholia" = those in whom no history of manic outbursts was found; "mania" = those in whom no history of melancholic outbursts was found; and "manic-depressive psychosis" includes all those in whom alternating states were definitely known to have occurred.

† This represents the residue of those to whom no diagnosis could be attached. In a large number of the other cases great doubt has existed, and the writer realizes quite clearly that these would be open to question.

‡ Mental defectives and epileptics are not usually admitted to the Retreat.

admissions would have probably been larger. In cases of recurring illness the patient's resources are strained, and many have had to be certified and admitted to hospitals with lower fees or to the rate-aided mental hospitals.

SECTION III.—THE ADMISSION OF VOLUNTARY BOARDERS.

The admission of voluntary boarders is a matter of considerable delicacy. The suggestion made by the Commissioners* in 1870 that each intending

* *24th Report of the Commissioners in Lunacy*, 1870, p. 36.

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TABLE II.—*Diagnosis of* 1,095 *Voluntary Admissions*: 1891–1930.

Rec., recovered; Rel., relieved; N.I., not improved; S. H., still at the Retreat; Cert., certified.

Type of illness.	Single admissions.																			
	Male.							Female.							Total.					
	Rec.	Rel.	N.I.	Died.	S.H.	Cert.	Total.	Rec.	Rel.	N.I.	Died.	S.H.	Cert.	Total.	Rec.	Rel.	N.I.	Died.	S.H.	Cert.	Total
Melancholia	35	54	21	5	3	16	134	38	49	29	4	9	28	157	73	103	50	9	12	44	291
Mania	5	4	2	1	1	4	17	7	2	4	2	..	15	30	12	6	6	3	1	19	47
Manic-depressive psychosis	2	3	1	..	..	3	9	3	2	2	..	..	9	16	5	5	3	..	..	12	25
Confusional psychoses	3	7	2	..	..	2	14	12	6	2	3	1	11	35	14	13	4	3	1	13	49
Schizophrenia	..	12	12	..	3	7	34	2	11	10	..	..	10	33	2	23	22	..	3	17	67
Paranoia	..	1	2	..	1	..	4	..	1	5	..	2	2	10	..	2	7	..	3	2	14
Paraphrenia	..	5	4	..	..	..	9	..	6	1	..	2	3	12	..	11	5	..	2	3	21
G.P.I.	2	4	9	..	..	6	21	..	..	..	..	..	..	..	2	4	9	..	..	6	21
Organic psychoses and those dependent on visceral disease	1	..	..	3	..	1	5	..	1	..	4	..	..	5	1	1	..	7	..	1	10
Drug addiction:																					
Chloral	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Morphia	2	..	1	..	..	..	3	..	..	..	..	..	..	..	2	..	1	..	..	..	3
Alcoholics	20	8	3	2	..	1	34	2	..	..	1	..	..	3	22	8	3	3	..	1	37
Senility	..	9	..	5	1	4	19	1	4	5	4	..	5	19	1	13	5	9	1	9	38
Psychoneuroses:																					
Anxiety states and hysteria	5	5	2	1	3	..	16	8	9	6	..	5	..	28	13	14	8	1	8	..	44
Obsessional	..	5	1	..	..	..	6	1	..	1	1	..	1	4	1	5	2	1	..	1	10
Doubtful diagnosis	1	..	4	..	..	..	5	1	1	3	..	..	..	5	2	1	7	..	..	..	10
Epilepsy	..	..	..	..	..	..	..	..	1	..	..	1	2	4	..	1	..	..	1	2	4
Mental defect	..	1	1	..	..	1	3	..	1	..	..	..	..	1	..	2	1	..	..	1	4
Emotional M.D.	..	..	..	1	1	..	2	..	2	3	..	..	..	5	..	2	3	1	1	..	7
	77	118	65	18	13	45	336	75	96	71	19	20	86	367	152	214	136	37	33	131	703

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TABLE II.—*Continued.*

Type of illness.	Multiple admission.																				Persons in multiple admissions.		Total of single and multiple admissions.
	Male.							Female.							Total.								
	Rec.	Rel.	N.I.	Died.	S.H.	Cert.	Total.	Rec.	Rel.	N.I.	Died.	S.H.	Cert.	Total.	Rec.	Rel.	N.I.	Died.	S.H.	Cert.	Total.	Male.	Female.	
Melancholia	31	18	1	1	1	4	56	25	22	5	..	2	11	65	56	40	6	1	3	15	121	25	26	412
Mania	4	2	..	..	..	1	7	5	10	1	..	..	2	18	9	12	1	..	..	3	25	3	6	72
Manic-depressive	23	12	2	2	1	11	51	33	13	10	1	..	7	64	56	25	12	3	1	18	115	13	9	140
Confusional	10	..	..	..	1	..	11	..	..	..	..	..	..	..	10	..	..	..	1	..	11	3	..	60
Schizophrenic	..	4	..	..	..	..	4	1	7	..	..	1	1	10	1	11	..	..	1	1	14	2	5	81
Paranoia	..	2	..	..	..	..	2	..	2	..	..	..	..	2	..	4	..	..	..	..	4	1	1	18
Paraphrenia	..	..	..	..	..	..	..	1	1	..	..	..	2	4	1	1	..	..	..	2	4	..	2	25
G.P.I.	1	1	..	..	..	2	4	..	..	..	..	..	..	..	1	1	..	..	..	2	4	2	..	25
Organic psychoses and those dependent on visceral disease	3	..	..	..	1	..	4	4	3	2	1	..	..	10	7	3	2	1	1	..	14	2	3	24
Drug addicts:																								
Chloral	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Morphia	4	..	..	..	..	..	4	..	..	..	..	..	..	..	4	..	..	..	..	..	4	1	..	7
Alcoholics	8	2	..	1	1	..	12	2	1	..	..	..	..	3	10	3	..	1	1	..	15	6	1	52
Senile cases	..	4	..	..	..	..	4	..	1	..	1	..	1	3	..	5	..	1	..	1	7	2	1	45
Psychoneuroses:																								
Anxiety states and hysteria	9	6	2	..	1	..	18	4	3	3	..	1	..	11	13	9	5	..	2	..	29	6	4	73
Obsessional	5	2	..	..	..	..	7	5	3	1	..	..	..	9	10	5	1	..	..	..	16	3	3	26
Doubtful diagnosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10
Epilepsy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Mental defect	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	2	..	..	..	2	..	2	6
Emotional M.D.	..	6	..	..	1	..	7	..	..	..	..	..	..	..	..	6	..	..	1	..	7	2	..	14
	98	59	5	4	7	18	191	80	66	24	3	4	24	201	178	125	29	7	11	42	392	71	63	1,095

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patient should write out his own application for admission has not been carried out at the Retreat. Instead, patients have been asked to sign a printed form worded as follows:

"I, the undersigned, being desirous of entering the Retreat as a voluntary boarder, hereby agree to carry out the wishes of the Medical Superintendent, and not to leave the Institution without having given twenty-four hours' notice in writing of my intention to do so."

As can be imagined, every variety of admission can occur under such circumstances. In the earlier days a good deal of preparation of the patient for the step took place before he left home. In recent years some patients have arrived at the hospital who have never been acquainted with the idea that a definite request on their part is to be made. Admission in such cases *may* be easy, but in others this acceptance on the patient's part of his own responsibility makes for real difficulties. With patients in slight elation the writing of their name on any document, and the chance it gives them of a new experience, is undertaken with facile happiness. It is very different with the vacillating melancholics and psychoneurotics. Their retardation or indecision may make the whole process of admission overwhelmingly long.

The diagnosis of many of the patients shows that they were suffering from types of psychosis which superficially one would not associate with clear volition. An investigation of such a criticism may well start with a comparison between the voluntary admissions and 1,170 certified cases admitted during the last twenty-seven years.

TABLE III.—*Comparison in Percentages of the Diagnosis of* 1,095 *Boarders and* 1,170 *Certified Cases.*

	Percentage of admissions.	
	Certified.	Voluntary.
Manic-depressive psychosis:		
Mania (Cert. 16%, V.B. 7%)		
Melancholia (Cert. 28%, V.B. 38%)	47	58
Alternating cases (Cert. 3%, V.B. 13%)		
Schizoid, paranoid and paraphrenic cases	21	11
Psychoneuroses	2	10
Drug addiction	..	7
Confusional cases	15	5
Senile cases	6	4
General paralysis of the insane	5	2
Organic psychoses	1	2
Secondary dementia	2	..
Mental defect and epilepsy*	1	2
	100	101

* Mental defectives and epileptics are not usually admitted to the Retreat.

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One must stress the fact that voluntary admission is not a question of diagnosis; it is a question of volition. In days when psychiatric classification is still indefinite at times, one is continually confronted with cases in which the signs alter almost daily, and what appears to be an attack of melancholia one day seems to be a frank paranoia the next. Hence the attempt to form an opinion on admission as to whether the patient will continue to remain a satisfactory voluntary boarder may well be abandoned, and the suitability or otherwise can only be considered in relation to the immediate prospects. As is explained later, the question of certification of boarders depends more upon the general type of their conduct than upon the diagnosis that is made.

There are, of course, many cases where the admitting physician must draw the attention of patient and relatives to the possibility of a chronic element in the illness, or to the likelihood of conduct which will necessitate the removal of the boarder or his certification.

Two types of cases in particular might seem unsuited to be voluntary patients—the paranoid and the senile cases.

So long, however, as the hospital and its routine remain outside the delusional system, the paranoid patient is willing to remain under care. He accepts the help that hospital treatment gives, and welcomes the security.

The difficulty with regard to paranoia is the complete lack of insight such patients exhibit. It is clear that most paranoiacs should be certified, but isolated cases exist where for a time voluntary residence is possible.

Are persons apparently suffering from senile brain changes suitable voluntary patients? "Senile" has been applied to cases of depression, elation and confusion in persons whose abnormalities have appeared to be due wholly to age, and where no previous history of any instability could be found. The condition is likely to be progressive, and though these cases have been willing to come for treatment, it has been recognized that their volition will probably be lost later.

There were 45 cases diagnosed "senile". One was considered to have recovered, 18 left "relieved", 5 were unimproved but went to satisfactory care elsewhere, 1 was still in residence at the end of 1930, and 10 died.

Of the 10 cases certified, in 8 the step was taken on account of lost volition associated with confusion following further small thromboses. In the 2 other cases, acute agitation and anergic stupor were the conditions leading to certification. Two of the patients certified so far improved that they were discharged "recovered" later. In each case the explanation was that they became acutely confused following a small thrombosis, and once resolution occurred, their mental condition rapidly cleared.

This brief survey shows that improvement has frequently followed in persons admitted on account of senile cerebral changes, and reception as voluntary boarders has been justified.

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During the earlier part of the period under review, the fact that an intending boarder was likely to require hospital care for some months often led the authorities to insist upon his certification. This attitude is now altered. The prospect of a lengthy illness is no measure of the patient's own willingness to submit to treatment. What appears on admission to be a chronic melancholia or a paraphrenia does not denote absent volition. Such cases often remain the most contented boarders, fully aware of their own limitations.

The comparison of the percentage differences between the certified and voluntary cases shows how many psycho-neurotics and drug addicts have been admitted on the voluntary basis. Such persons are usually only certified when their symptoms have been present for some time. At this stage hope of cure is remote. Only 2% of this class of case were found amongst 1,170 certified cases, whilst 17% of the voluntary admissions comprise these disorders. These patients are often very conscious of the necessity for their being cared for in some institution, and the figures bear testimony to the fact that the voluntary boarder system has to some extent fulfilled this need.

Schizoid, confusional and paretic cases enter much more frequently as certified than as voluntary cases. Cases of the manic-depressive psychosis have been admitted rather more often as voluntary than as certified patients. Certified maniacs outnumbered those who were merely slightly elated, conscious of their abnormalities, and willing to come in of their own accord. One of the most encouraging features is the willingness of previously certified cases belonging to the manic-depressive group to return as voluntary patients. Whilst only 4% of the single admissions were known to be pure cases of cyclothymia, 29% of the multiple admissions were recognized as regularly alternating cases.

In the mind of the voluntary patient who has been previously under care, the hospital represents a place of refuge and of treatment, and not an institution to be rigidly avoided.

At least 51 out of the 835 persons admitted had previously been received at the hospital under certificates. This figure should probably be larger, but accurate information is not available.

An estimate as to the success of admitting so many persons as voluntary boarders may be formed from a comparison of the percentages of each type of psychosis admitted, and the number of each type certified. (See Table IV.)

The figures in Table IV do not include those cases found unsuitable for admission as boarders whose relatives either refused certification or secured their admission elsewhere. It would be impossible to make an accurate estimate of that figure. It is striking that the number of those subsequently certified is so comparatively small. The table suggests that the voluntary system, even for patients likely to be permanently unstable, has answered well. A belief that an intending boarder is suffering from one of the more malign types

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of psychosis is no justification for refusing to admit him except under certificates.

TABLE IV.—*Showing:* (1) *Percentage of Each Form of Mental Disorder Admitted;* (2) *Percentage for Each Form Subsequently Certified;* (3) *Percentage of Group 2* (i. e., *subsequently Certified Persons*) *to the Numbers of Each Form of Disorder Admitted.*

	(1)	(2)	(3)
1. Manic-depressive psychosis:			
Mania	7	2	31
Melancholia	38	5	14
Alternating cases	13	3	21
2. Schizoid, paranoid and paraphrenic cases	11	2	20
3. Psychoneuroses	10	(*)	(*)
4. Drug addiction	7	(*)	2
5. Confusional cases	5	1	22
6. Senile cases	4	1	22
7. General paralysis of the insane	2	1	32
8. Organic psychoses	2	(*)	4

(*) = less than ½%.

SECTION IV.—RESULTS OF TREATMENT OF VOLUNTARY BOARDERS.

The state of each patient at the end of his stay has been reviewed, and has been noted as "Recovered", "Relieved", or "Not improved". In addition 44 voluntary patients have died, and the same number were still in residence on December 31, 1930. 173 patients were certified and remained at the Retreat.

The numbers of patients discharged as "Recovered", "Relieved", and "Not improved" are respectively: 330, 339, 165, or 40, 40, 20%.*

If these figures are compared with the discharge of certified patients from 1904–1929 inclusive, the results are:

	Recovered (%).	Relieved (%).	Unimproved (%).
1,095 Voluntary admissions	40	40	20
1,195 Certified admissions	42	31	27

The immediate reflection is that the results of treatment, whether as certified or voluntary patients, are very similar.

* The number of voluntary boarders who were certified and remained has been excluded from these percentages, as no counterpart to them occurs amongst cases who are certified during the whole of their stay at the Retreat.

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A closer analysis shows that the ideal results to be obtained should show a more favourable outcome in the case of the boarders.

The following facts emerge from a careful comparison with the 50 certified patients discharged unrecovered after admission between 1925 and 1929:

(*a*) Departure before full recovery has been attained is more than four times as common with boarders as with certified patients.

(*b*) 44% of the boarders and only 4% of the unrecovered certified patients leave against advice.

(*c*) Those leaving for treatment elsewhere are more numerous amongst certified than amongst voluntary cases, and this is allied with statement (*b*) above.

(*d*) The stay of the voluntary boarders, whether recovered, relieved or unimproved, is distinctly shorter than the stay of the respective class of the certified case. This is associated with two factors:

(i) Judged by length of stay before recovery, the boarders represent as a whole a much more benign type of illness.

(ii) The length of stay of many of the unrecovered boarders is extremely short.

(*e*) An unsatisfactorily high number of boarders (217) leave whilst the prognosis is still good if the hospital treatment is continued, but in whose cases grave doubt as to their immediate suitability for home conditions exists.

These figures suggest that the number of recovered, relieved and unimproved cases cannot be satisfactorily compared with the numbers of the recovered, relieved and unimproved certified patients, whose departure is in more cases the result of quiet decision, and savours less of the hurry and impulse associated with many boarders' departures.

Is it possible to give some hypothetical figures of the results likely to have been obtained had the voluntary patients been treated under certified conditions; in other words, had the patient not been swayed by his own indecisions and impulses? It is proposed that the figures for those who were only "Relieved" and not "Recovered" because they had left a little early, and the figures for those who were "Relieved" and "Not improved", but who left in less than one month, despite their otherwise good prognosis, should be added to the "Recovered" cases, and removed from their present classification.

It must be noted that such statistics take no account of those who were unimproved, or only relieved after one month, but whose subsequent departure was dictated by caprice or impulse, and was without the medical attendant's approval. This group may be considered to balance the numbers of certified cases who, from a similarly large group, may be expected to leave by the request of the petitioner and against the physician's advice.

If this shift in numbers is made the results are as follows:

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	Recovered.	Relieved.	Not improved.	Total.
Present totals	330	339	165	834
As percentages	40	40	20	..
Deduct alcoholics	22	8	3	33
	308	331	162	801
Add those "Relieved" cases where full recovery shortly after departure was assured	+45	—45	..	..
Add those "Relieved" and "Not improved" cases with good prognoses who left within one month of admission	+44	—44	..	..
	+29	..	—29	..
Revised totals	426	242	133	801
Expressed in percentage	53	30	17	..

Though these figures are obtained artificially, there is little doubt that they express much more nearly the anticipated results of the type of case which has been found suitable for voluntary admission. The difference between them and the ratio of the actual results achieved, *viz.*, 40, 40, 20, is too large to be satisfactory to the psychiatrist, and the 13% difference in recovery rates is one which he must hope an enlightened public will gradually help to diminish. It is not a mere question of producing excellent statistical results. The psychiatrist wishes to ensure that voluntary patients do not leave his hospital, or other suitable supervision, until there is real hope that mental stability has been attained. In this connection the results obtained from patients who ceased to be satisfactory boarders, and whose relatives co-operated and were willing to have the patient certified, are of interest. In such cases there is an uninterrupted stay in the hospital, but the patient at the critical time is not allowed to leave. The status of 173 persons was thus changed, and of the 124 who have since left, 51% were recovered, 30% were relieved, and 19% were not improved. (See Section VI, p. 122.)

The great drawback of voluntary treatment is that the very ease of admission diminishes the sense of responsibility which should be felt by the applicant —a sense of responsibility which is felt by a petitioner, partly no doubt because of the formalities which accompany certification. Thus, whilst the voluntary method of admission to mental hospitals enables milder types of mental disorder to seek treatment, the freedom which such cases have to leave

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at unsuitable times militates against the hope that such treatment shall be as satisfactory, continuous, and ordered as it is in the case of certified patients.

Section V.—The Boarder who Leaves Against Advice.

Out of a total of 493 boarders who left before recovery occurred, 217 left against medical advice. Analysis of 213 certified cases admitted between 1925 and 1929 revealed that 50 of these left before recovery, but only 2 were removed by the petitioners against advice. Expressed in percentages, 44% of the non-recovered boarders leave without approval; only 4% of the certified cases are removed in this way.

It is the purpose of the present section to explain why the difference in the figure for voluntary as compared with certified cases should be so large.

Every care is taken to ensure:

(1) That patient and relatives realize that the step proposed is believed to be contrary to the patient's best interests.

(2) That the relatives always, and the patient often, know of the possibilities of entering other hospitals which on account of management, fees or locality may appeal more to their personal preferences.

It is not easy to give figures of prognosis in these cases. As mentioned in Section IV, a number left in less than ten days, and in cases of mental illness, often no reliable decision can be made in so short a time. A rough estimate suggests that in at least 65% of the 217 cases recovery from the existing attack was likely; 141 cases out of the 1,095 left, therefore, when recovery was probable. The voluntary system of admission is open to the criticism that a large number of recoverable cases leave without adequate reasons. In the series considered the number who did so was 13% of the total admitted.

Table V (p. 116) shows the distribution of these cases.

Cases in which the patient leaves against advice may be classified thus:

I. Alterations in the patient's volition.
- (*a*) The vacillating and indecisive melancholic.
- (*b*) The interfering hypomaniac.
- (*c*) The capricious psychoneurotic.

II. Non-co-operation of the relatives (coupled with easy influence of relative over patient).
- (*a*) Relatives' active interference.
- (*b*) Refusal of relative to certify a no longer volitional boarder.

I. (a.) *The Melancholic.*

This type presents certain common features. There is a simpleness in character and a dependence upon the wishes of others. Apprehension is

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TABLE V.—*Diagnosis of the Cases of Boarders Who Left Against Advice.*

	Relieved.		Not improved.		Total.
	Male.	Female.	Male.	Female.	
Melancholia	34	29	19	25	97
Mania	4	1	1	3	9
Manic depressive psychosis	4	7	3	12	26
Confusion	2	3	..	..	5
Schizophrenia	9	6	6	4	25
Paranoia, etc.	1	2	1	4	8
G.P.I.	1	..	..	..	1
Drug addiction	6	1	4	..	11
Senility	4	..	..	3	7
Anxiety states	1	2	3	3	9
Obsessional states	4	3	1	2	10
Hypochondria	..	..	..	1	1
Doubtful diagnosis	..	1	4	3	8
	70	55	42	60	217
Average length of stay in days	76	75	20	36	..
Prognosis :					
Good	45	36	21	39	141
Poor	25	19	21	21	76

marked, together with a sense of guilt (hence the difficulty of separating the true cases of obsessional neurosis from the group).

The patient is anxious for admission. The relatives have explained the position to him, and for the time he feels the responsibility really rests on other shoulders, and so he enters the hospital. But the patient's very dependence upon others increases his apprehension once the support of the family seems removed. After the first night, or even earlier, the sense of separation from one upon whom he can depend is voiced in his pathetic pleas that (subconsciously) the spectre of guilt may be laid low. "I wish I hadn't signed that form." "I'm sure I've done wrong." "Will you take in my notice at once?" Until he becomes re-orientated, until he has transferred his affects on to physician or nurse he will remain apprehensive. Apprehension, already a feature of his illness, seems definitely increased because of the change

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in his surroundings. In these cases the prognosis for recovery from the present attack is generally good. Depression is so marked and insight so poor that suicide is always a possibility. Attacks of acute indecision recur, during which the patients require constant reassurance. At these times they are particularly liable to decide to leave. Attacks of this nature must be treated in an atmosphere of established routine. This is impossible under the home conditions. It is desirable that extraneous influences should be as far as possible eliminated. The patients' knowledge that they were able to leave at their own request may be regarded as such an extraneous influence. Their voluntary status must be regarded, therefore, as an actual hindrance to satisfactory treatment.

I. (b.) *The Hypomaniac.*

The second group deals with those patients whose querulous over-activity is likely to disturb those amongst whom they live, and in whose cases home conditions are likely to prolong rather than shorten their illness.

Amongst voluntary boarders leaving early and against advice the hypomaniac figures largely. Both the mildness of his symptoms and the character of his temperament are responsible for this. On account of (*a*) his emotional instability, and (*b*) his insensitiveness to other susceptibilities, he more readily seeks treatment of his own accord than any other type. He also marches off again when unfit to do so. He resents any suggestion that he is not quite well yet, and has no insight into the way in which his mild elation is disturbing to others.

Nevertheless cases of multiple admission confirm the strength of the voluntary system, and show how such persons return happily to care at times when they are realizing that their symptoms are recurring.

I. (c.) *The Psychoneurotic.*

The risk of suicide here is less great, since the emotional state is not usually one of such deepened depression ; the unsuitability of living in home conditions is, however, greater, since motor activity is conditioned by a constantly altering emotional outlook. These cases are capricious, wayward, demonstrative. The patient must be attracting attention, either by his quarrelsome behaviour, or vagaries in conduct which his neighbours cannot fail to notice. This demand is so insistent that such a person destroys his family's peace, and if he will not remain under care voluntarily, the case for his certification rests on his complete unsuitability for life in a normal social *milieu.*

The following case illustrates this type :

F. 999. Married woman, æt. 32. She had been subject to anxiety symptoms

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for some years, but had latterly been more continuously depressed and hypochondriacal. She said her condition was hopeless; she was exceedingly self-centred and infantile in outlook. She talked continually of her physical state, and was the cause of some distress to other patients to whom she poured out her woes. She was very unsettled, but it was realized that she could never resist the temptation of making special calls upon the doctors' attention by giving in her notice frequently. The psychological causes of her symptoms were not difficult to surmise, but she was too restless and querulous to benefit at the moment by psychotherapeutic conversations. She suddenly decided to leave after one month's stay and dashed off precipitately. She returned within seven days, was very miserable, but promised not to re-open the matter of leaving for at least two months. This promise she kept, but required constant support and encouragement from those around her. She returned six months later for three days, and then again three weeks later for one month.

This patient was undoubtedly certifiable. One can be glad that there are institutions where such a neurotic individual can rest and receive care. Her four residences at the Retreat were anything but satisfactory. Though she probably had better insight into her condition when she finally left, one prolonged stay equivalent to the total of her four short ones would unquestionably have produced more benefit.

Legislation as yet provides no satisfactory arrangement for such cases. The very ability of the voluntary patient to give in his notice is used by the psychoneurotic as a means of attracting the doctors' attention. And the self-attraction motive of the neurotic is the one that it is most necessary to alter.

In the cases so far considered the onus of blame must be placed largely on the non-co-operation of the patient. In those which are next to be dealt with, the onus must be placed upon the non-co-operation of the relatives. This is shown in two directions:

(*a*) The removal of a boarder because the relatives are dissatisfied.

(*b*) In cases where a boarder ceases to be suitable and volitional, refusing either to have the boarder certified, or to have him transferred elsewhere.

In type (*a*) the boarder is willing to stay, the relatives interfere and persuade him to leave; in type (*b*) the boarder's volition has become impaired and the relatives refuse to consider the advisability of certification.

As an example of relatives' active interference the following case is cited:

M. 1129. Æt. 45, single, draughtsman. The patient had been becoming increasingly self-absorbed and retiring for some months before admission. He could not concentrate, and there were short periods of irritable elation. He appreciated the rest and relief which hospital treatment gave him, at once began sleeping better without sedatives and made satisfactory progress. He was, and must always have been, an inadequate personality, and was influenced much by a dominating and less well-educated father. His parent imposed upon him definite limits as to how long treatment must take. When he was not cured at the end of one month, recriminations occurred. The same happened at the end of the second month, and finally the poor man was metaphorically dragged home at the end of eleven weeks, when recovery was as yet incomplete. This was recognized by the

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patient, who was torn between obedience to the tyrannical parent and the necessity of a longer rest under hospital conditions.

Whether voluntary boarder or certified patient, his fate might have been the same. Partial failures of this sort will occur under either system. But the figures given suggest that this occurs more often with voluntary than with certified cases.

As an example of refusal of relatives to certify a no longer volitional boarder, the following case may be quoted :

M. 1018. Stockbroker, æt. 34. He had had recurring attacks of depression since he was 18, but had continued at business. On admission, however, his morose attitude, foolish smiling to himself and general abstraction suggested that his illnesses were schizophrenic in type. He quite understood the volitional basis on which he was admitted, and said he preferred staying quietly in the hospital. His mood changed with alarming rapidity, and though often sociable and amiable he passed quite quickly into deep taciturnity. There was no doubt that he was certifiable, but his relatives professed uneasiness about his remaining longer and took him home.

He returned five months later from a seaside holiday. He had been peculiar, distant, and suspicious. He seemed quite willing to return, and settled at once. He was abnormally lazy, was certainly hallucinated, and had fleeting delusions of persecution.

He was continually visited by relations, and one was alarmed when they insisted on taking him home again. His actions were obviously dictated by false sense-perceptions, and he was quite unsuitable for life in a normal house. The relatives were adamant. They adopted an attitude of amused superiority towards the authorities who criticized their plans. Nevertheless the patient had to be transferred elsewhere within three weeks of his departure from the Retreat.

If the previous history of this patient was correct, and he suffered from a series of schizophrenic attacks with alternating periods of normality, it is particularly to be regretted that during this attack he was not allowed to remain throughout at one hospital.

The instances given above of patients leaving against advice all point to a lack of sympathetic arrangement between patient, relatives and the hospital authorities.

Under the hypothetical conditions that the 217 cases considered in this section had been certified from the commencement, causes of leaving under Group I and Group II (*b*) would be eliminated. If Group II (*a*) represents the only cases who would leave against advice, one has in a measure answered the question with which this section commenced, *i.e.*, why 44% of the voluntary cases leave against advice, whilst only 4% of the certified cases do so.

These departures of the unrecovered patients are one of the most unsatisfactory features of voluntary treatment. It is relevant to discuss possible ways in which the numbers of those leaving thus may be diminished.

In the first place, a small percentage of mental patients are before admission

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very badly prepared for the step proposed. They are, therefore, prejudiced against the hospital from the first, because they have some sense that a deception has been practised.

Satisfactory results are only likely where patient, relatives and hospital staff are not only on terms of tolerance, but are actively co-operating for the patient's benefit. This sense of co-operation grows after a time. It is essential that it should be felt by all parties from the start. The hospital authorities must realize the sense of separation felt, the fear of the unknown, the conscious or unconscious criticism of all they do.

To the doctor and nurse a new patient's admission may produce the contempt borne of familiarity. If it does, both relative and patient realize it, and the atmosphere becomes difficult from the start. It is essential that both parties should feel surprised that all is better than they feared—and that a sense of security is aroused. The taking of a detailed history, and a patient listening to many inconsequential details, is likely to cement the belief in the individual's mind that the hospital authorities are deeply interested in his case, and to add to the sense of careful personal supervision.

For the patient a sense of security, ordered routine and friendliness are essential. If one of these is absent the likelihood that he will decide to leave is increased. The atmosphere is in any case strange, and full of possible traps and horrors. To obtain the patient's co-operation is no easy task.

His reactions will be determined by the type of his psychosis.

The melancholic is already reacting to an intolerable situation. Fear, guilt and the sense of powerlessness are all at the back of his reactions. His fears are deepened by this step of leaving the known for the unknown, and are projected on to the already false ideas he has about hospital methods and surroundings.

His sense of guilt is expressed in his constant questioning, "Have I done right"? His sense of inferiority makes him suspicious that to talk of being a voluntary patient, "free to come and go," is a pretence, and he assumes that he has signed away his own liberty. Such ideas originate in the notions he has gained previously about asylums, and are the confused mixture of these with the ideas produced by his feelings at the moment. He can be approached by asking him to compare the imagined picture of an asylum with the real picture. And a careful explanation of why he has been advised to seek treatment and of the uses of his voluntary status all help to reassure him. The sense of powerlessness is very real. Only by acknowledging its existence can one help to relieve it. Mere assertion of the power of the hospital staff will intensify the patient's antipathy to hospital routine.

The problem of gaining the hypomaniac's co-operation is very different. He confers a favour by entering the hospital. He is willing to experiment with residence, but he will give no promise of staying if the institution does not

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meet with his approval. He has a fantastically high standard. Failure on the part of others to reach this produces anger, annoyance, and often an immediate determination to leave. During the acute phases of his illness it is necessary to try and meet him on his own high plane, accepting his assertions and avoiding his arguments.

The psychoneurotic is acutely conscious of his abnormality. He is harassed because be cannot understand his symptoms, but he knows that they distress or may upset others. There is a certain pride in their uniqueness, and it is this pride that is gratified in the attention paid to the patient in hospital. Whilst the psychoneurotic boarder often complains volubly about the distress which other patients cause him, it is found that he is using this " distress " to attract more attention to himself than others. So long as this is secured, he is likely to remain a contented boarder.

These, then, form some of the difficulties which the patient feels in connection with hospital routine and its administrators.

How is he influenced by relatives and friends ? In the great majority of cases it is they who have urged him to seek treatment. What they think about the hospital, its treatment and his progress is vital to the way the patient will also consider these matters.

Relative and doctor will not co-operate for the voluntary patient's good unless they understand each other. To the doctor, the relatives' actions often seem to be impulsive and interfering. But does he fully realize the strain imposed upon them ? Any illness will cause disquiet, a mental one much disquiet. It destroys the relative's feeling of security. He becomes worried over his own prospects, casts about for " causes " of the breakdown, particularly those which will not point to a hereditary taint. A great deal of the anxiety expressed by the relative has its origin in anxiety about the possibilities that he or other members of the family may suffer thus.

His reactions are twofold. He adjusts by (1) an increase in his sense of power to cope with the family trouble, and (2) he projects the criticisms aroused by the disaster on to others.

The constantly recurring cry of the relative, " But I know so much more about X (the patient) than you do ", is partly conditioned by the first adjustment. In cases of physical disease this plaint is rarely heard. But the relative of the mental patient must convince himself that in some respects he is paramount to others, because his instinct of self-security has been so rudely upset by the family catastrophe.

The second adjustment is seen in the relatives' anxieties about the hospital itself. " We did not expect it to be like this." (They did not expect their relative to break down as he had done.) " Do the doctors really know ? " (" Did we know that mental illness was likely to descend upon us ? ") " Is the hospital quite the right place, or ought he to be moved elsewhere ? "

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(" Has our family environment more responsibility than we care to admit for the trouble ? ") The bracketed questions are supposed to be the questions which the relatives cannot face, and for which the other problems more acceptable to them can be substituted.

The questions and criticisms quoted are very frequently heard, and they are repeated to the patient. The disquiet of the relative is shared by the already questioning patient. Is it remarkable that under such conditions he will give in his notice ?

This outline of some of the factors which account for patient's, relative's, and doctor's attitude is not seen in every case. But the cases in which such an understanding of the other's point of view is neglected, are those in which the patient is most likely to leave against advice. The physician blames patient, relative, or system. The patients and relatives point to environment, nurses or doctors. It is suggested that any guilt must be more equally apportioned. The task of realizing the other's motive is sometimes harder than the work of criticizing one's own outlook.

This section began by showing how large a number of boarders who are not recovered leave against advice. It was suggested that under certified conditions this " leakage " was smaller. It might seem right, therefore, to criticize the voluntary system on the grounds that patients both enter and leave the hospitals far too easily. When the motives which condition the sudden decision of the patient or the reasons of his dissatisfaction are understood, it is seen that the problem of the unrecovered boarder (with good prognosis) will be solved when closer understanding exists between patient, relatives and hospital staff. The criticism of the voluntary system which the " leakage " denotes imposes a responsibility on all those who can in any way increase the *rapport* between all three parties, but mere legal enactments are unlikely to do this.

Section VI.—Subsequent Certification of Voluntary Boarders.

Forty-five male and 86 female boarders terminated their voluntary stay by being certified and remaining at the Retreat. Of the recurring admissions, 18 males and 24 females were certified and remained. Hence, out of 1,095 admissions, 173 patients, or 15·8%, were found unsuitable to remain on the voluntary basis.

In addition, 39 males and 32 females were transferred direct from the Retreat to public mental hospitals. As these transfers were the result of the expenses being higher at the Retreat than in the rate-aided hospitals, it must not be assumed that these additional 71 cases were unsatisfactory boarders. Certification in their case was necessary, since only certified patients could be received at these hospitals before 1931.

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Compared with the number of each type of illness admitteed voluntarily, the following is the percentage of those who were certified and remained :

	Percentage.
General paralysis	32
Mania	31
Confusional cases	22
Senile cases	22
Alternating insanity	21
Schizophrenia, Paranoia, Paraphrenia	20
Melancholia	14
Organic psychoses	4
Drug addiction	2
Epilepsy	50

These figures correspond fairly closely with expectations. Maniacs and paralytics show much the highest percentage (with the exception of two cases of epilepsy). In all these types the excitement is such that action *must* be taken at once. The idea of taking a maniacal patient home in order to avoid certification is not to be entertained. Whilst some schizophrenics or melancholics may return home when their volition is disturbed, no such alternatives can be toyed with in cases of acute excitement.

The Commissioners of the Board of Control dislike the practice of a boarder being made a certified patient at the hospital to which he has been admitted voluntarily. The hospital authorities share this view, but in actual practice it is a step which has occasionally to be taken. However sentimentally unfortunate, the patients who recover are very willing to admit the necessity of the step when they gain insight into what was the gravity of the illness at the time of their certification. The objections have to do with the laity rather than with the patients themselves. Transfer is hardly practicable in cases of extreme excitement or suicidal agitation. Where a patient suffers from recurring attacks of mental disorder, he himself would much prefer to remain under care in a hospital he knows rather than to be transferred to a hospital with which he is unacquainted. The objections are less in cases of confusion, stupor, or agitation. It remains an arguable point whether the sentimental reasons should outweigh the reasons of utility which certification and continued treatment in the one hospital alone provide.

The reasons for the necessity of certification have been classified into five main and two subsidiary groups :

Group I : Confused cases or cases showing gross abnormality of conduct (38 cases).

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Group II : Anergic and stuporose cases (25 cases).

Group III : Cases of marked excitement (35 cases).

In the foregoing groups the volition thought to be present on the patient's admission becomes gravely disordered. In the next two groups the volition of the patients judged by their remarks and actions belie desire to remain in the hospital.

Group IV : Indecisive and agitated cases. They wish to leave, but are unfit to do so. The querulous and interfering patient who does not co-operate at all is included in this group also (39 cases).

Group V : Marked suicidal gestures (15 cases).

Group VI : Eleven cases where the Commissioners of the Board of Control insisted on certification form a sixth group.

Group VII : Six cases could not be classified.

Group I.—This is a composite group, and includes all those whose volition, good at first, became impaired when acuter symptoms of illness developed—deluded melancholics ; excitable maniacs ; bizarre, obstreperous schizoids ; acute confusional cases ; and grandiose impulsive paralytics.

Anergia and stupor (Group II) and excitement (Group III) are quite obvious reasons for certification. What is noticeable, however, is that this only stresses the extraordinary variations in the course of mental illness. There are no constant factors or signs observed at present by which even within the first week the course of the illness can be foretold. Each case has to be judged on the merits of its signs on admission, and the possibility of future certification mentioned to the relatives. Neither a garrulous hypomaniac nor an expansive paralytic can be said to be unsuitable for voluntary admission. Nor are there any means of knowing whether a retarded melancholic who appears to realize the quality of his act in applying for admission, will or will not pass into anergic stupor.

Group IV is an interesting one—" indecisive, agitated, querulous ". Cases of the manic-depressive psychosis are numerous in it. In the case of querulous maniacs, the wish of the Board of Control that they be removed and certified elsewhere can probably be carried out. In the case of the agitated, frenzied melancholics, such a method is obviously impossible.

Group V embodies 15 cases who were certified on account of definite suicidal gestures on the patient's part. In the earlier days of voluntary boarders, the fact that the patient had at one moment acted in a manner suggesting that he did not wish to remain in the Retreat and would rather take his life was followed by the immediate completion of certification. This urgency is not admitted now, but such patients *must* still be removed or certified if they do not freely express their wish to remain.

Group VI : Certified at the wish of the Commissioners of the Board of Control.—That the Commissioners " think that certain cases mentioned in the Patients'

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Book at present voluntarily received should be certified" (the formal mode of expression) does not necessarily denote active criticism on the part of the Board of Control. The hospital authorities are usually themselves doubtful of the status of such cases, and sometimes require the official dictum to enable them to press unwilling relatives to take the necessary steps. But occasions do arise when the Commissioners and the medical staff differ in their interpretation of a patient's volition. It is obvious that the medical staff may be too keen in keeping the number of voluntary boarders at a high level. It is equally obvious that in the Commissioners' comparatively short visit they may be too dogmatic about a patient's volition.

As has been shown, the view of the hospital authorities and of the Commissioners has gradually altered. It used to be necessary for the visiting committee to renew permission for a boarder to stay every three months. These renewals gradually lapsed. In 1910 a Commissioner became seriously concerned that a boarder had stayed three years. In 1931 some boarders have stayed over five years. Reception voluntarily is being extended more and more and patients now look upon the hospital as a home where they can gradually recover self-assurance and confidence, and not merely as an institution into which they are thrust by their friends.

The foregoing survey of the 170 cases who have been certified and remained will not support a contention that because voluntary patients require certification later, therefore the voluntary system has failed. Such a contention would be supported if it could be shown (1) that certification was a step that had to be resorted to almost immediately such patients were admitted; (2) that the Commissioners had continually found evidence of voluntary boarders wrongly received on that basis.

The average length of stay of boarders before certification was 52 days, and of the 1,095 cases only 51 were considered by the Commissioners to be unfit to remain on that basis.* These two facts support the claim that the voluntary system of admission cannot be judged to have failed because 170 cases had to be certified later.

After-history of the Boarders who Have Been Certified.

One may now turn to the after-history of voluntary boarders who lost their volition, were certified and remained in the Hospital.

In the 124 cases which have since left the Hospital, 51% were recovered, 30% relieved, and 17% were unimproved. This compares very closely with the hypothetical figures arrived at in Section IV, where statistics are presented

* When the relatives were informed of this, a number of the 51 patients were transferred elsewhere, and some 20 were certified and remained. In the remaining cases the relatives refused to allow certification, and the patient went home.

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for the probable results of voluntary treatment when precipitate departures could be prevented.

The high percentage of recoveries is a remarkable contrast to the popularly held belief that if certification is necessary, chronicity of course is likely.

The Alteration in Attitude to the Necessity of Certification.

The attitude of Commissioners and medical men to the necessity of certification has, one has hinted, broadened. The percentage number of voluntary boarders certified in each year of admission is of interest. For the first twenty years that the 1890 Act was in force this figure ranged from 12–44%. From 1911 there has been a steady decline from 32%, until during the last five years the figure has been between 4 and 11%.

The possible causes of this fall are :

(1) A greater readiness on the part of the relatives to remove the patient if the alternative of certification or removal is placed before them.

(2) An increase in the percentage number of boarders admitted who were suffering from milder forms of illness, and thus less likely to require certification.

(3) A more liberal attitude on the part of the Lunacy Commissioners and medical authorities as to the type of case which may continue to remain voluntarily.

As regards the first possibility, the writer's experience is that whilst a number of relatives continue to refuse certification, this number is not proportionately higher than it seems to have been before 1925. Nor is he able to state definitely, or find evidence for the second possibility. For the third possibility there is ample evidence.

Examples showing this alteration in outlook about the certification of boarders follow :

F. 236. Æt. 41, admitted in 1909 : a recent melancholic. Tubercle bacilli were found in her sputum within a week of admission, and she was consequently certified. She gradually recovered, and was transferred to a sanatorium in less than two months.

The fear that a voluntary patient might die was the cause of certification.

The next case is an example of the theory that chronicity of course denoted absence of volition (or that no person could possibly wish to remain voluntarily in an asylum for any length of time) :

F. 114. Æt. 43, admitted in 1907 : paraphrenia. She had had one previous admission, a voluntary one of three months. She returned in two years. She was a little distant and reserved, and talked softly to her " voices," which only troubled her at night. After a three years' stay a Commissioner decided that so long a stay on the voluntary basis was not natural (he said " unsatisfactory ") and ordered certification. The physician who was summoned for this purpose could not make

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out a certificate. The matter remained in abeyance for a further two years, when it was again raised by the visiting Commissioners. Certification was achieved, and the patient died naturally twelve years later.

It is to be noted that both before and after certification the patient was no trouble to anyone except for occasional noisy outbursts at night.

At present one lady has been voluntarily received for ten years, one gentleman for seven. Their status is discussed on each of the Commissioners' visits, and approved. Several persons of each sex have remained on the voluntary basis for periods of from two to five years.

As examples of the altered attitude towards patients who break their parole, the following cases serve:

M. 155. Æt. 28, admitted in 1907: recent depression. An apparently willing and co-operating voluntary boarder. After two months he ran away for twenty-four hours, but returned of his own accord. On account of his broken parole he was certified.

It is to be noted that his return was voluntary, and was not undertaken at some other person's entreaty. Nevertheless certification was insisted upon.

Compare with the above case the following:

M. 795. Æt. 20, admitted in 1925: schizophrenic. After almost nine months, during which he was a little dull and abstracted (but had spontaneously mentioned his happiness in his surroundings) he suddenly disappeared. For five days of suspense not a word was heard about him. Then a letter was received which contained the following passages. ". . . Just a line to say how sorry I am. I seem to have been nothing but a nuisance to you all. . . . I have roughed it since seeing you last. I thought about coming back once or twice . . . " He had not returned home, and was found in the district from which the letter came. He returned very willingly. He confessed that the idea of suicide was uppermost in his mind, but he could not carry it out. He remained as a voluntary patient, had a temporary phase of two weeks during which he was acutely hallucinated, but recovered from this and finally returned home distinctly relieved.

Either one must regard the second of these two cases with serious criticism, or admit the great alteration in outlook which has taken place.

The notes of the early voluntary cases give abundant evidence showing how rapidly certification was enforced. Every suicidal gesture made was accepted as evidence of unsuitability for voluntary treatment, and legal reception was sought under certificates. A recent case can be compared with this.

F. 1055. Æt. 45, admitted in 1929: climacteric depression with marked hysterical colouring. She was considered suicidal and carefully watched. She was a not-unwilling boarder (this is not the same as a willing voluntary boarder) but her status seemed satisfactory. Six weeks after admission she purposely set fire to her clothes, and was for some days in a critical condition. When her physical condition had recovered she was apathetic, but she made no further suicidal attempt, nor showed any other signs of dissatisfaction with the basis upon which she was

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received. The Commissioners were fully acquainted with the circumstances but did not insist on certification. The patient's status has been discussed with them on three further occasions, and it is now doubtful how much longer she can be accepted as a voluntary patient. This doubt does not rest upon her suicidal attempt, but upon her present semi-stuporose condition.

At the moment of the suicidal gesture the volition of this patient was disturbed. For a longer or shorter time after her reception into a hospital, the limitations which its routine imposed had distressed her and, probably impulsively, she had sought self-destruction. The logical outcome is, perhaps, certification. And this wholly logical step was the one adopted in former days. But it is to be noted that the Commissioners are satisfied with the good faith of the hospital authorities in these and similar cases. The fact that she was a voluntary patient was fully accepted and recognized, and the present attitude of the Commissioners is to consider the general volition of the patient over a period of time, rather than the patient's volition at the moment when he commits some impulsive act.

Section VII.—Suicidal Voluntary Boarders.

It is proposed to discuss in this section matters concerning those boarders who have actually committed suicide whilst in the hospital, or upon their return home, and in connection with the departure of boarders believed to be potentially suicidal for whom no adequate supervision is provided.

Only two schizophrenics in the series were considered to be suicidal when discharged. All the cases discussed in this section refer to depressed persons of the melancholic type.

Most unfortunately, the depressed patient does not by any means always present such outrageous symptoms as will distress the mind of those in his social *milieu*. Even though the normally active and happy person gradually becomes quieter, sleepless, and self-accusatory, his symptoms do not arouse the alarm that maniacal excitement, hallucinations, or fatuous and impulsive conduct provoke. Supposing the patient has entered a mental hospital, the relatives admit that he is below par, they value the fact that his sleep is returning and that physically he is better, often enough that his harassed looks are less obvious. And they believe that they are dealing with a man in need of physical rather than of mental care, often in need of physical stimulation rather than of physical and mental rest. They persuade him to give in his notice of intention to leave, the doubts of the medical staff are disregarded, and an obvious potential suicide sallies forth into an environment wholly unsuited for him. There is in such cases another motive for the relative's actions—public opinion and the stigma of mental hospital treatment. Some of the reasons, honestly held, which militate against early mental treatment were dealt with in Section V.

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Some factors which influence the general practitioner are the following :

(*a*) His own practice : When public opinion is so antagonistic to treatment in a mental hospital, the general practitioner can well sense the odium which will attach to him if he suggests such a course before its necessity becomes patent to all.

(*b*) Diagnosis : In a number of cases the treatment of the melancholic under hospital conditions is deferred until suicide has been attempted. It is well known that many worried and anxious patients are not psychotics at all, and danger is not supposed to attach to their remaining at home.

(*c*) His own personality and temperament is often such that it gets the best out of his patient. Naturally cheerful, he fails to recognize that he is not dealing with a psychoneurotic who is longing to be told to take a rest or go for a sea-cruise. And the actual percentage of true psychotics in his practice as compared with those showing temporary symptoms of anxiety or more chronic signs of psychoneurosis is likely to be small.

On the other hand it must be realized that a frank suicide or suicidal gesture by no means implies a diagnosis of melancholia, but may occur in persons who must properly be regarded as suffering from a psychoneurosis rather than from a psychosis. If such mistakes may occur in institutions, how much more readily may they occur outside ?

(*d*) The phasic variations of a psychosis must not be forgotten. Melancholic depression is well known to be worst in the early hours of the morning, at a period when doctor and patient very rarely meet. The phases of the disease alter from day to day, and alter sometimes as the result of emotional factors which pass unrecognized.

(*e*) Lastly, recent cases in the Law Courts enhance the stress the practitioner puts upon II (*a*) discussed above. Though it may be voluntary admission which he recommends, the relatives may not be very ready to enter into the differences between this and certification, and there remains a distinct reluctance on the doctor's part to mention hospital treatment in the early stages of the illness on account of these very fears.

In the case of potentially suicidal boarders who have returned home, one may ask : What differences would have occurred had the patient been certified before entering the Retreat, or had he been certified instead of taken home ?

The differences are due to the effect which is produced in the mind of relatives and patient by certification.

The certified patient recognizes that he is *not* a free agent. Where relationships between doctor and patient are happy, this acceptance on the latter's part is a satisfactory one. Consequently the problem of choice in the matter does not arise for the patient. He may, and often enough does, write pathetic letters asking his relatives to remove him. This brings one to the second factor, that of the petitioner. The interposition of the justice's order, possibly

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also the factor of two doctors having separately examined the patient, constitutes both a bond of faith and an assurance of security. The petitioner, therefore, may approach his trust in a different way from that of the relative of a voluntary boarder. Ideally, of course, the approach should be the same; in practice it is not. As has been shown, the relatives are swayed far more by the boarder than they are by the certified patient.

The above argument applies particularly to those cases in which restless agitation, causeless remorse and uncertainty of purpose are marked, all associated with grave emotional depression. In these persons there are periods when they were genuinely anxious to remain under hospital care, but their rapid change of attitude and constant appeals for removal make it quite clear that their volition is not sufficiently stable for them to remain on a voluntary basis.

Once such cases become certified, their appreciation that the responsibility has been accepted by others is a factor which removes a constant source of concern. Therapeutically, therefore, legal detention satisfies the aim for the patient's welfare; it also satisfies the physician's conscience that a patient is being received on a satisfactory basis.

From a study of the voluntary boarders who left against medical advice, the following conclusions arise:

(1) Almost half the number of boarders who leave against advice are melancholics.

(2) 58 were deemed to be still potential suicides. (As is shown in the sequel, 14 of these actually ended their own lives less than nine months later. Two others almost succeeded in so doing.)

(3) Those who have been admitted more than once appear to be more willing to act upon medical advice than those admitted for the first time.

The conclusion which must be drawn is that the voluntary system allows a number of suicidal cases to leave hospital care, whilst certified cases at the same stage of their illness are not allowed to return home. The difference lies in the attitude of the relatives in the two cases. The process of certification produces in the petitioner's mind a willingness to abide by the advice of the hospital authorities. It removes from the agitated patient a factor of distress, and he accepts hospital treatment more placidly than the voluntary boarder, who continually remembers that his remaining under care depends mainly upon his own decision.

The above conclusion rests upon the evidence so far advanced. It is necessary now to turn to cases in which suicide has actually happened after boarders have left the hospital.

No case is included where suicide has occurred more than nine months after the end of their stay, since such cases might occur after the patient's recovery from one attack, and during the course of another.

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Secondly, the particulars only deal with cases in which the hospital authorities have heard, often accidentally, of the occurrence. After-care treatment and other follow-up methods are lamentably ill-developed, and one's suspicions are that probably more suicides occur than can be traced.

Of the 1,095 cases, 5 committed suicide whilst still patients voluntarily living at the Retreat. In 4 of these cases the fault was obviously lack of supervision. In the fifth, the patient's wife promised to supervise his movements on a walk outside the grounds, but allowed the patient to leave her at the local station (!). He committed suicide immediately afterwards. So far as is known, no patient who left "recovered" out of a total of 129 melancholics so discharged died by his own hand within the subsequent nine months.

Nine male and 5 female patients committed suicide within nine months of the end of their residence at the Retreat.

In 3 of the 14 cases the danger was unsuspected. One of these cases only stayed seven days. The other two had stayed sufficiently long to have aroused some suspicion as to the likelihood of suicide, but this possibility had not been foreseen.

In one case the patient asked to go for urgent family reasons and promised to return. He committed suicide within three weeks.

In the other 10 cases the relatives had been warned of the dangers run, but adequate supervision was not arranged.

Certain other facts are relevant:

(1) In 17 instances the depression was the first melancholic episode in their lives.

(2) The age of 17 out of the 19 cases ranged from 42 to 58. The average age of all 19 was 51.

(3) Of 110 melancholics who left contrary to advice, 11, or 10%, are known to have committed suicide shortly after leaving. As 58 of the 110 were regarded as potentially suicidal, 19% of such cases have subsequently confirmed these fears. Though the prognosis of climacteric melancholia must be more guarded than the prognosis of the disease when affecting young persons, the prognosis of recovery of these cases with adequately prolonged treatment was good, and the 19% indicates a suicide rate far in excess of what ought to obtain. It must be further remembered that owing to lack of information the figures are naturally incomplete, and that the 19% represents the lowest estimate of the suicide rate amongst boarders who leave too early.

(4) If it is correct to state that melancholia is an illness sometimes of three months' duration, but usually of six or longer, all 14 cases left after an inadequate length of stay. The shortest were those of 1, 6 and 7 days only, the longest one of 96 days. The average length of stay of the 14 cases was 62 days.

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Section VIII.—The Treatment of Alcoholics as Voluntary Boarders.

Fifty-two of the 1,095 admissions were of alcoholics. This figure applies to those persons in whom the mental disturbances could not be traced to any other psychotic condition. The group does not include cyclothymics, in whom alcoholic bouts are sometimes related to the onset of a depressed or exalted phase.

These alcoholics are divisible into three groups :

I. *Cases of acute alcoholism associated with more or less confusion and delirium.*

There were 23 males and 1 female in this group. 15 recovered, 5 were relieved, 2 were not improved, but left against advice, and 2 died. The average length of stay was 25 days.

Nine of these patients left in less than 10 days. Four of these appeared to be completely normal. In so short a time one could only treat the symptoms, and there was no opportunity to treat the condition either by an "anti-alcoholic course", or by therapeutic conversations with the patient. The only cold comfort that can be claimed is that the hospital provided a temporary refuge.

II. *Cases of chronic "drinkers" who entered the hospital for protection and for treatment.*

There were 20 males and 5 females in this group; 17 were "recovered", 7 left relieved, and 1 developed a Korsakov syndrome and was certified.

The average length of stay of the men was 95 days, and of the women 9 months.

Only 5 of the cases left in less than 1 month.

It is perhaps in these cases that the principles of voluntary care have been most completely fulfilled. There is full understanding between patient, relative and physician. Little of the petulance against a restricted life has been apparent, and the patients appear far less sensitive to the stigma of mental hospital treatment than those who suffered from frank psychoses. In addition to the measures aiming at an improvement in the patient's physical condition, the question of onset and stimulation of the craving has been discussed with him. On the whole the patients have been co-operative. The recoveries in the first group have been a little too rapid. The protestations that "I've done with drink now" were too hollow to be satisfactory. In this second group one is dealing with a more confirmed type of alcoholic. But the conduct of the patient, both in hospital and upon his departure, has been far more indicative of permanent therapeutic success.

III. *Cases of chronic alcoholism associated with commencing dementia.*

This group only contains three patients. The continuous satisfaction of

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the alcoholic craving has resulted in these cases in some more definite psychotic signs being present. A number of paranoiacs and paraphrenics appeared to owe their condition partly to alcoholic excess, but have not been included here.

The three patients in this group left somewhat improved physically. One refused to stay longer than a fortnight, one remained two months, and one only left after four years.

The most disappointing feature of these alcoholic voluntary boarders lies in the fact that so few of them have returned later. Only seven persons did so. It is unlikely that the others never broke down in a similar way again. It is suggested that this is associated with the alcoholic's superficiality of affect. The ties which bind the melancholic and maniac to a hospital which has yielded refuge to them in the past are far stronger than those which the alcoholic feels towards any particular institution.

The gratifying feature is that cases of alcoholic mental disorder have been able to enter hospitals as voluntary patients at a time when they could only have been certified with difficulty, or perhaps not at all. One case may be cited:

M. 1180. Wine merchant, æt. 50. This patient has been associated with the spirit trade all his life. He has been almost wholly a teetotaller! (This statement was confirmed by independent witnesses.) Three times during the past five years he has had outbursts of whisky drinking, and in each case this has been excessive. These bouts have coincided with domestic troubles (again vouched for by independent witnesses), and on each occasion he has been worried by them and consulted his doctor. Residence in the Retreat has followed. He has been willing to discuss matters. He has been able to adjust to the family troubles and he has remained well. Although the patient's willingness to come to the Retreat has not effected anything more than an immediate escape from a strained situation, it seems clear that if there were not institutions of such a kind providing the benefits, (1) routine, rest, supervision, (2) the opportunity of discussing the patient's deepest difficulties, persons of this type would continue to drink excessively with little hope of periods of freedom.

It is quite clear that such persons could not be certified until their alcoholism had produced much graver symptoms.

A different example follows:

A severe alcoholic was brought by his friends from Ireland for treatment. The patient was dogmatic and refused to enter voluntarily. The unhappy relatives were told that until his habits had produced unsoundness of mind or his attitude to voluntary reception had altered, he could not be supervised in a mental hospital. The outlook was extremely grave.

The law still fails to offer any solution to the problem this case presented. It was not a question that the relatives refused to certify. He was clearly not certifiable, though his continuous alcoholic craving would rapidly make him so.

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Section IX.—The Treatment of Psychoneurotics as Voluntary Boarders.

There were 99 admissions of persons suffering from some form of psychoneurosis. The uncertainty of diagnosis has been specially marked here. Not only has the differentiation of anxiety states from melancholia been difficult, but that of the psychoneurotic states amongst themselves has been far from clear. Where the former doubt has existed the case has been classified as a psychosis rather than as a psychoneurosis.

Out of 1,095 admissions, therefore, 9% have been of persons suffering from psychoneuroses. These 99 admissions relate to 48 persons: 16 persons were admitted more than once. Of the admissions, 37 recovered, 33 were relieved, 16 were unimproved, 2 died from intercurrent infection, and 11 are still in residence; 73 of the admissions were for symptoms of anxiety and hysteria, 26 were for obsessional complaints.

These patients, like the alcoholics, were confronted with problems and impulses which they were unable to handle satisfactorily. This lack of control was not sufficient to produce disorders so gross that certification was indicated, or would have been possible. The notion of their admission into hospitals where only certified cases were received could only rarely have been entertained. The possibilities of their treatment by rest and separation from strain was only likely to be achieved by the patients entering the atmosphere of a hospital where their problems might be discussed.

The fact that only 2% of such cases were received during twenty-seven years as certified patients supports the contention that certification is rarely considered. The psychoneurotic can seldom be admitted under certificates, and the authorities always aim at securing voluntary admission. Numerous examples are known of chronic psychoneurotics who burden themselves and their relatives because no treatment is forthcoming in the early stages of the condition. Treatment of the patient as a certified case was not considered, and no conditions existed for his receiving skilled attention elsewhere. By the passing of the 1930 Mental Treatment Act further steps in the alteration of this state of things will have been taken. Psychoneurotics of whatever class will be able to seek refuge in suitable mental hospitals.

Another important point in the treatment of the psychoneurotic is made possible thereby. The neurotic is usually willing to come for treatment. He takes pleasure in all that is done for his egocentric self. But he finds that under hospital conditions routine and discipline are necessary. These factors are usually absent at home, especially in the neurotic's home. In some hospitals little individual attention for the neurotic can be assured. But routine and discipline are certain in all hospitals, and the benefit these factors produce

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upon such conditions is often very great. Routine and discipline are not referred to on account of any punitive force they exert. Their benefit lies rather in the fact that they compel the neurotic to make an adjustment to the social *milieu* of the hospital—an adjustment which his illness has only too often allowed him to evade in his own home. As examples of these difficulties and the effect of hospital routine upon them, Case F 999 (p. 117) may be mentioned.

Summary.

1. 1,095 cases were admitted to the Retreat as voluntary boarders between January 1, 1891, and December 31, 1930. 703 cases were admitted once. 71 men and 63 women were admitted twice or more.

2. During the period voluntary admission has been made increasingly easier, on account of a widened outlook on the part of the Commissioners of the Board of Control and of the medical authorities. Since 1925 more voluntary patients than certified patients have annually entered all the registered mental hospitals.

3. Volition at the time of admission, with the likelihood that it will continue for an appreciable period, is the only satisfactory criterion as to whether a patient may be admitted to a mental hospital as a boarder or not.

4. The results of cases staying voluntarily have been: Recovered 40%, relieved 40%, unimproved 20%. In 1,170 cases admitted under certificates, the results have been: Recovered 42%, relieved 31%, unimproved 27%.

5. The conditions under which voluntary patients are received allow a number to leave against advice. 44% of the unrecovered boarders leave in this way. Under conditions of legal detention this number would be likely to be much less, and an approximate figure for the results then is computed to be: Recovered 53%, relieved 30%, unimproved 17%.

6. A number of the voluntary admissions are highly unsatisfactory because of the attitude adopted by the patients' relatives and friends. The tiresome formalities of certification seem to instil into the relatives a profounder appreciation of the seriousness of mental disorder. Knowledge of his ability to leave the hospital of his own choice is a hindrance to the recovery of the vacillating individual, and this attitude handicaps a number of other cases rather different in type, but who are likely to recover under hospital treatment.

7. 170 voluntary cases were certified when their behaviour no longer confirmed their volition. The causes for this step were confusion, stupor, excitement, indecision, querulousness, suicidal attempts. 51% of these cases ultimately recovered. Examples of the alteration in attitude towards the necessity of certification are given.

8. Neither senile nor paranoid cases are at all times unsuitable for voluntary admission.

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9. The ease with which a voluntary boarder can leave is especially dangerous for potential suicides. Possibility of suicide is a condition which is not recognized readily by the relatives, and seems sometimes to be purposely overlooked. The causes of this are discussed. Suicide of voluntary boarders within a short time of their leaving hospital care has occurred too frequently: 14 cases are known in this series.

10. Reception of patients as voluntary boarders has enabled alcoholics and psychoneurotics to seek hospital treatment. Such cases were rarely willing to come for treatment when the only mode of admission was certification. Of the 1,095 admissions, 52 were of alcoholics, and 99 were of psychoneurotics.

I have to thank Dr. Neil Macleod, Medical Superintendent of the Retreat, for assistance and advice in the preparation of this paper.

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A STUDY OF THE SEXUAL LIFE IN PSYCHOSES ASSOCIATED WITH CHILDBIRTH.

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It is now universally recognized that there is nothing specific in the form of psychoses associated with childbearing. There is, however, still a tendency to attribute to the puerperium itself or to pregnancy or lactation a significance quite out of proportion to that of other precipitating factors; thus such terms as " puerperal depression ", or " puerperal schizophrenia " are still in use, as if the precipitating factor were something special as opposed to the innumerable other causes assigned to the appearance of an attack of mental disorder. Nor is this surprising when one reflects on the enormous significance of the sexual life. One is quite willing on *a priori* grounds to grant to the puerperium this all-important rôle.

Considerable stress has been laid on the nature of the woman's sexual constitution in these cases. Thus, Zilboorg, in an examination of puerperal schizophrenias, suggests a careful study of the sexual life, and regards aloofness, shyness in the presence of men, courtship lasting several years and persistent frigidity in marriage as danger signals. He finds frigidity a remarkably constant phenomenon in his cases. He states that the greatest majority marry after prolonged courtships, and usually in the latter part of the second decade of life. He states, further, that all his cases with one exception were chronic masturbators.

Eleanora Saunders, in a study of 75 cases of all forms of puerperal psychosis, admitted to the Shepherd and Enoch Pratt Hospital over a certain period, found that " a great many were frigid ". She discusses the pre-psychotic personality of these women and talks of the " perpetual child in herself ".

On the other hand, McCarthy mentions an excessive eroticism as occurring in schizophrenic cases, and states, " the patient is to a great extent forced by the family into the marital state on account of hypersexuality ".

The author's own impression was that there seemed a fair degree of probability in some of the statements cited.

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He had also been impressed with the apparently greater prevalence of masturbation in puerperal psychoses. At one time nearly all the cases in his ward which did masturbate were puerperal. This impression seemed to find some support from the literature, although the references are few. Thus Armstrong-Jones states, "erotic delusions appear with immodest behaviour and improper language . . . and indecent suggestions. Marked sexual excitement with faulty habits (? masturbation), together with religious insanity, are more often met with in this form of insanity than any other. . . ."

Tomlinson noted 21 patients in his series of 60 who showed sexual excitement. This occurred in those cases where there had been no normal sexual appetite before the outbreak of insanity.

Again, Lévy-Valensi mentions eroticism in puerperal cases and cites Dupouy who considered that it was due to vulvo-vaginal trauma. Unfortunately he does not give the exact reference. Lévy-Valensi regards it as a "superficial feature". It is not quite clear what exactly he means by "superficial"; masturbation as such he does not mention.

In the present study, 50 cases of psychosis in which childbirth or pregnancy was considered the precipitating factor admitted to the Maudsley Hospital in the years 1929, 1930 and 1931 were examined. The data in respect of the pre-psychotic sexual life yielded by these cases were compared with similar data obtained from 50 cases of married women of roughly the same age, admitted to hospital over the same period in which childbirth was not the precipitating factor. In addition the relative frequency of masturbation and other erotic phenomena during the psychosis was also observed, and compared with their frequency in the non-puerperal group.

All the cases of Group I (the puerperal cases) were married at the time of the birth or miscarriage. The puerperal cases were the first 50 cases which came to hand; the 50 cases of non-puerperal psychosis (Group II) were also selected entirely at random; most of them had been, at one time or another, under the author's care, but many of the case-histories had been written up by other members of the staff, and all of them had been done in the usual routine way without any reference to the present study, which was not then in contemplation.

The diagnosis on discharge of the cases in the two groups was as follows:

Group I (Puerperal):

Depressive states	(34)	68%
Schizophrenic states	(9)	18%
Toxic confusional states.	(3)	6%
Manic states	(1)	2%
Stupor reaction	(1)	2%
Anxiety states	(2)	4%

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Group II (Non-puerperal):

Depressive states	(35)	70%
Schizophrenic states	(9)	18%
Toxic confusional states	(1)	2%
Manic states	(0)	..
Anxiety states	(4)	8%
Hysteria (conversion)	(1)	2%

The similarity of the two groups with respect to diagnostic frequency is striking.

The average age on admission in Group I was 29·4 years, the oldest 42, the youngest 21 years. The average age on admission in Group II was 31·6 years, the oldest 40, the youngest 23 years.

In Group I the symptoms first occurred in pregnancy in 13 cases (26%) and followed the birth of the child in 33 (66%). They followed a miscarriage in 4 cases (8%).

With reference to Group I, the " puerperium " was regarded as the period from the birth of the child till the end of the sixth week after; this is the period given by Bleuler, and other authorities on the gynæcological side, *e.g.*, McIlroy, agree. All the puerperal cases in the narrower sense in Group I fall within this period with one exception, which was given as "six to eight weeks", but the puerperium was here regarded as the precipitating factor.

The data were collected under the following heads:

I. Menstruation.
II. Pre-psychotic sexual life, love affairs, married life, sexual satisfaction, etc.
III. Attitude to the pregnancy.
IV. Physical and psychical features during pregnancy.
V. Parturition—character of the labour, physical and psychical features.
VI. Lactation.
VII. Previous attacks (*a*) associated with childbearing.
(*b*) not associated with childbearing.
VIII. Previous confinements.
IX. Masturbation and other erotic phenomena during the illness.
X. Attitude to the husband.
XI. Attitude to the child.

Discussion.

In both groups states of depression preponderate, and there is a remarkable similarity in the proportion of the diagnoses in the two groups. The figures with respect to affective reaction are similar to those of Kilpatrick and

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Menstruation.

Puerperals.		Definite statement in:	*Non-Puerperals.*		Definite statement in:
Average age of onset (earliest 11, latest 18)	14·7	34	Average age of onset (earliest 11, latest 18)*	13·8	40
Regular	40	44	Regular	38	49
Irregular	4		Irregular	11	
Dysmenorrhœa	18	35	Dysmenorrhœa (6 suffered from dysmenorrhœa formerly, but not recently)	21	39
Other physical accompaniments, *e.g.*, headaches, nausea, faintness, etc.	12	28	Other physical accompaniments	10	30
Psychic accompaniments, *e.g.*, depression, irritability, increased energy	21	30	Psychic accompaniments	20	30
Reaction to puberty: Uneventful	8	16	Reaction to puberty: Uneventful	9	20
,, ,, "Upset," "frightened," etc.	8		,, ,, "Upset", "frightened", "annoyed", "a little excited"	11	

Pre-psychotic Sexual Life.

Puerperals.		Definite statement in:	*Non-Puerperals.*		Definite statement in:
No serious love affair before husband (1 of remainder twice married)	11	21	No serious love affair before husband	9	22
Sexual curiosity	2	7	Sexual curiosity	3	10
Pre-marital intercourse admitted	14	30	Pre-marital intercourse admitted	10	31
Homosexual tendencies	1	2	Homosexual tendencies	2	7
Length of engagement—average 2·6 years (shortest 5 months, longest 5½ years)	..	16	Length of engagement—average 3·4 years (shortest 8 months, longest 12 years)	..	19
Age at marriage, average 24·2 years (youngest 17, oldest 37)	..	47	Age at marriage, average 23·7 years (youngest 18, oldest 35)	..	50
Married life alleged happy	39	48	Married life alleged happy	31	47
,, ,, unhappy	9		,, ,, unhappy	16	
Frequency of coitus ascertained	..	29	Frequency of coitus ascertained	..	39
Once weekly	9	..	Once weekly	8	..

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More than once weekly	10	..	
Less than once weekly	4	..	
" Infrequent "	1	..	
" Variable "	1	..	
" Fairly frequent "	1	..	
Contraceptives used	12	.	41
Coitus interruptus (either alone or in combination with other methods)	16	..	
No mechanical or chemical contraceptives	24	..	
Gratification alleged full as a rule	13	.	43
Frigidity	22	..	
Dyspareunia	3	..	
Masturbation before marriage admitted	6	.	25
" " " denied	19		
Attitude to the pregnancy : Aversion	15	.	33
" " " Wanted	18		
Physical symptoms during pregnancy	6	.	42
Psychical features during pregnancy (other than frankly psychotic)	2	..	
Character of the labour normal	26	.	40
Puerperal thrombosis and eclampsia	1	..	
" Puerperal fever "	1	..	
Placenta prævia	1	..	
Contracted pelvis ; labour induced, slight pyrexia afterwards	1	..	
Labour normal, but experienced by patient as difficult	6	..	
Miscarriage	4	..	
Lactation commenced	22	.	32
Previous attacks associated with child-bearing (in one case two previous attacks)	9	.	50

More than once weekly	12	..	
Less than once weekly	8	..	
" Infrequent "	10	..	
Contraceptives used (Same methods as in Group I)	18	.	44
Coitus interruptus (either alone or in combination with other methods)	22	..	
No mechanical or chemical contraceptives	26	..	
Gratification alleged full as a rule	16	.	45
Frigidity	19	..	
Dyspareunia	3	..	
Masturbation before marriage admitted	11	.	33
" " " denied	22		
Previous attacks associated with child-birth	5	..	
Doubtful case	1	..	

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Pre-psychotic Sexual Life—*continued.*

Puerperals.

		Definite statement in:
Previous attacks not associated with child-bearing (4 cases two previous attacks each—one of these after her first coitus was depressed and had feelings of unreality)	16	50
Previous confinements, including miscarriages, not associated with psychosis	23	50
One previous pregnancy or confinement	12	..
Two previous	7	..
Three ,,	4	..
Primiparæ	23	..
Masturbation during psychosis	4	..
Other auto-erotic activity	2	..
Other erotic manifestations	5	..
Attitude to the husband during the psychosis	..	31
Friendly	9	..
Definite aversion	9	..
Other reactions, *e.g.*, self-reproachful attitude	7	..
Refusal to use married name	2	..
Other reactions	4	..
Attitude to the child during psychosis	..	29
Aversion	9	..
Other reactions (V. I)	20	..

Non-Puerperals.

		Definite statement in:
Previous attacks not associated with childbirth (2 cases three previous attacks each—1 case two previous, in 12 cases one previous attack)	15	..
Previous confinements, including miscarriages, not associated with psychosis	31	..
One previous pregnancy or confinement	14	..
Two previous	8	..
Three ,,	5	..
Four ,,	1	..
Five ,,	1	..
Six ,,	1	..
Masturbation during psychosis	1	..
Doubtful case	1	..
Other erotic manifestations	5	..

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Tiebout, who found 50% of their cases manic-depressive, 24 depressed, 6 elated and 3 circular; 14% were dementia præcox, 4% were psycho-neuroses, 32% were deliria.

Tuttle also found more cases of manic-depressive insanity after childbearing than any other form.

E. Saunders found that only a little over a third of her cases were affective, and that as many as 39 out of 75 were schizophrenic.

Zilboorg also finds schizophrenic states most numerous—about 50%.

Ellery found that toxic exhaustive states preponderated in his series (49%), while manic-depressives were only 27%.

Galant found that melancholia accounted for 12·5% and mania for 5%, whilst "amentia" (acute hallucinatory insanity) accounted for as many as 55·4% and delirious states for another 17·5%.

Clark, writing in 1913, found 23 cases out of 75 manic-depressive, and "confusional" cases 34.

Aschaffenburg, writing in 1901, found 39 cases out of 132 associated with childbirth to be manic-depressive, and 46 out of the same number dementia præcox, and in addition 10 cases of the latter which were made worse by childbearing.

Tomlinson, writing in 1899, found delirium the commonest form.

It is perhaps hardly legitimate to compare the figures of the Maudsley group with those from other hospitals, as the former hospital selects its cases on the grounds of good prognosis.

The precise time of onset of the psychosis, either in pregnancy or after childbirth, could not always be stated with accuracy.

Seven of the puerperal cases developed a psychosis during or at the end of the first week, 6 during or at the end of the second week 5 in the third or at the end of the third week. In 1 case four weeks later, 2 cases at the end of five weeks, and 1 at the end of six weeks. In 2 or 3 the patient was depressed afterwards but tried to carry on, only to break down into an acute psychosis a few months later; the real onset of the illness was, however, quite definitely related to the puerperium.

In 7 cases, where the psychosis began during pregnancy, symptoms appeared in the last trimester, in 2 of which just a few days before delivery, in 2 cases during the first three months and in 1 case symptoms were present all during pregnancy. There is general agreement in the literature as to the relatively greater number of cases after parturition.

The menstrual history of the two groups is similar in most respects. The periods were in both groups regular in by far the majority of cases. Dysmenorrhœa was about as frequent in the one group as in the other.

Similarly with other physical accompaniments and with psychical features. The reaction to puberty yielded similar data in both groups.

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The menstrual life may therefore be dismissed without further comment.

In the pre-marital sexual life, the majority of the data point to no outstanding differences in the two groups.

Unfortunately details as to the length of the engagement were only available in 16 cases in Group I and 19 cases in Group II, and this included only two of the schizophrenic patients in Group I, one of whom had been engaged four years the other six months, so that no comment on Zilboorg's statement as to the length of the engagement in schizophrenic cases is possible. In Group II, statements on this point in the schizophrenic states exist in only three out of the 9 cases, one of whom was engaged two and a half years, another three years and the third five years. The comparatively long average duration in both groups (2·6 years and 3·4 years respectively) suggests that this may not be such an important factor in prognosis as Zilboorg believes, as the figures were largely obtained from other than schizophrenic cases, and the figure in Group II, was even greater than in Group I. In the latter group, if the abnormally long case of 12 years is eliminated, the average length of engagement is reduced to 2·9 years.

In Group II three of the patients had no real wish for marriage.

With regard to the cases with homosexual tendencies in Group II, the details are that one conceived an infatuation for an older woman and one was homosexually assaulted at the age of 12.

It may be noted that more cases in which intercourse was described as infrequent occurred in Group II. This is clearly difficult to interpret, as there were more cases in which a statement was obtained in Group II. To draw conclusions as to either frigidity or better sexual adjustment of these cases is equally possible. With regard to the first, however, definite information on this point in many cases exists, and in the second the whole sexual life must be taken into consideration. Too much stress, therefore, should not be laid on this, the one really distinctive feature of the second group.

In one case in Group I there was no coitus for the first two years of marriage (not included in the Table). In another case, also not included in the Table, for three years before admission, not associated with pregnancy, there was a period when desire was almost insatiable and coitus took place three times a week. In one of the cases there was no intercourse ; in another case, in the same group, no intercourse took place since the first four months of pregnancy, but this, of course, is by no means unusual. In one other case, for a time during her pregnancy, desire was insatiable, and her husband could barely satisfy her demand, so that she thought him cold in consequence ; this worried her greatly.

With reference to masturbation before the psychosis, little can be deduced from the figures. Masturbation was associated with deficient satisfaction in intercourse in three of the cases, in one of which the patient masturbated

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to obtain that satisfaction which her husband failed to give her. In another case, although she usually obtained satisfaction, at times she did not and then masturbated. One patient had masturbated once a week between the ages of 14 and 16, but derived normal gratification from coitus.

The age at marriage in the two groups corresponded fairly closely. The average age of the 9 schizophrenic patients in Group I was 23, the oldest 37, the youngest 20, which again does not support Zilboorg's statement that such cases marry late, from 25 to 35.

With regard to the question of happiness or otherwise in marriage, it is here of course extremely difficult to be sure of one's ground. One can, however, in most of the cases at least, be reasonably certain that the grosser troubles in the marital life have been excluded. As the number of cases in Group I on which information on this was obtained was 48, and 47 in Group II, it is possible to make a fair comparison. It is noteworthy that more cases of marital unhappiness occurred in Group II, although in both groups the majority claimed smooth relations. In no fewer than 19 cases in Group I, frigidity in coitus existed with smooth domestic relations, and in 13 cases in Group II there was a similar state of affairs. This does not support the many loose statements so frequently heard about the importance of the sexual act to smooth marital relations.

With regard to contraceptive measures, there is a slightly greater frequency in Group II, but no conclusions can be drawn from this. *Coitus interruptus* occurred in more cases in the second group than in the first.

Of much greater importance, of course, is the question of sexual satisfaction, on which so much stress has been laid, and here again the groups show no really outstanding differences. Here, again, a comparison is easy, as a definite statement under this head existed in 43 cases in Group I and 45 in Group II.

There is a slightly greater frequency of deficient satisfaction in the puerperal group, but really it is so slight as to make it impossible to state that it is a prominent feature in the history of cases of psychosis associated with childbirth as opposed to other groups.

In 5 of the 9 schizophrenic cases, frigidity was noted; in one other there was little satisfaction after the birth of her child. In one there was full gratification and in another no statement was obtained. So far this tends to agree with Zilboorg's observations, but from 9 cases obviously no conclusion can be drawn.

Neither the impression gained by the author nor the remarks in the literature as to the greater frequency of masturbation and eroticism in puerperal states are borne out by this study. It is also noteworthy that both groups together reveal only 8 cases of masturbation in 100.

One case, showing a schizophrenic reaction, made a dramatic representation

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of coitus; no further behaviour of the kind was observed after the first week or so in this patient. One other, a schizophrenic, rolled her breasts about when first seen, obviously deriving erotic satisfaction therefrom, but no further auto-erotic activity was observed during her stay. One other occurred in a state of semi-stupor; the patient masturbated frequently, apparently with satisfaction. There was no objective evidence of anxiety in this case. Another, a case of depression with paranoid ideas, would promenade up and down the ward in a state of quite clear consciousness and openly masturbate; this was phasic, and always occurred in a setting of extreme anxiety and agitation. Another was a case of stupor, who also had outbursts of anxiety in which she would masturbate so openly that other patients complained. The last was a case of depression with feelings of unreality, who developed strong sexual feelings whenever she thought of her child, and then had to masturbate to gain relief.

In Group II, one was a case of schizophrenia who was never observed to masturbate while in the Maudsley, but did so after transfer to another hospital; the other was a case of perplexity, who at times was seen to flush and make movements with her legs as if in orgasm.

It is also of interest to note that the first, second, fifth and sixth cases respectively in Group I were discharged "recovered," although the second case was somewhat shallow and silly on discharge. The fourth case has almost entirely cleared up, and is about to be discharged from hospital.

In Group II the first case was discharged "unimproved," while the second made a good recovery; thus, five of the total of 8 cases have made good recoveries, one other was well enough to go home and resume her household duties, while two remained unimproved. The statement often made as to the malignancy from the prognostic standpoint of masturbation in a setting of clear consciousness would seem to require some modification.

With regard to other evidence of eroticism, especially in puerperal cases, here, again, the number showing it was small.

The features of the two groups were closely similar, and nothing in the least characteristic of the puerperal psychoses is to be observed.

If marital maladjustment played a predominant *rôle* in childbirth psychoses, it would be expected that a large number of patients would show a definite aversion to their partners during the illness, but examination of the present material does not bear this out. In 5 of the 9 cases in which aversion to the husband during the illness was noted, the normal relationship was happy to all intents and purposes. It is of interest to note here that two of the non-puerperal group showed similar behaviour. One patient asked for her wedding ring, and when given it threw it away. Another case in the non-puerperal group, in a state of confusion early in her illness, when asked her name gave her maiden name.

In only 9 cases out of 29 was actual aversion to the child noted during the

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illness. Self-reproach over having failed to look after it was found in 3 cases, and desire to have the child again in 4. The following reactions to the child were noted: One had an obsessional dread of hurting the baby with a knife; one threatened to kill her child; one said it was diseased; one worried because she could not worry over the baby; one couldn't realize the child was her own; one felt as if she had done something terrible to it; one wished the baby harm, and regarded this as tantamount to killing it; one was worried because the child did not thrive; one was apparently interested in the baby, but said it was a cripple; one worried constantly about the child's alleged bad health (which had no real foundation), and took it from doctor to doctor, refusing reassurance; one said the child was different to others, and was doubtful whether it was alive; one could not imagine it was hers, and one denied the birth of the child at one stage. It is unnecessary to discuss here the fundamental mechanism described in these cases.

One of the toxic confusional cases had no memory of the birth of her twins, which died. One patient who had a miscarriage was disappointed she had not had a living child.

There was no case of infanticide in the series.

It is important to note the attitude of the mother to the coming child. The child was desired in a slightly greater proportion of cases in which there was a statement than otherwise.

In 3 cases the aversion to the pregnancy correlated with the aversion to the child during the psychosis. In 4 others showing aversion to the pregnancy, one had a fear of hurting the child, another could not realize the child was her own, one was constantly worried over the child's health, and in one other the patient took the child from her breast as she could not imagine it was hers.

The physical phenomena during pregnancy do not present any special features of interest, and it is likely that a similar number of normal cases examined would yield similar results.

Again, the psychical features during pregnancy, apart from those which were regarded as indicative of the onset of the psychosis, call for little comment.

Similarly with the figures in connection with lactation.

With regard to the incidence of psychoses in Group I, it will have been observed that nearly one-half of the cases occurred in primiparæ (46%). Zilboorg finds that puerperal psychoses occur oftener in multiparæ, but the preponderance in this series is very slight. Eight out of the 9 cases of schizophrenia in the present series were primiparæ.

Bourne, however, found primiparæ commoner (59%), as also E. Saunders. Clark, again, found primiparæ in the minority—29 out of 75 cases—as also Armstrong-Jones and Tomlinson (25%).

Consideration of the figures relating to previous attacks is of interest. That previous attacks, not associated with child-bearing, should have occurred

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in no fewer than 16 cases, and again that 23 stood the strain of previous confinements without psychosis, does not strengthen the claim of the puerperium as a specific precipitating factor. This is again brought out by the analysis of Group II, 5 of which had had previous attacks associated with childbirth, and one other had shown symptoms towards the end of pregnancy not amounting to definite psychosis. These facts, taken in conjunction with the data of the sexual life, in which no outstanding difference between the two groups was demonstrable, do not support the view that childbirth psychoses occur in women of specific morbid sexual constitution with the puerperium as the precipitating factor *par excellence*.

I wish to thank Dr. Edward Mapother, Medical Superintendent of the Maudsley Hospital, for permission to make use of the clinical material.

Summary and Conclusions.

1. Fifty cases of psychosis, occurring in association with childbirth, were studied with special reference to the sexual life, and compared with 50 cases of psychosis in married women of approximately the same age-period where the puerperium was not the precipitating factor.

2. No material differences were revealed in the pre-psychotic sexual life of the two groups.

3. Persistent frigidity cannot be reckoned a distinctive or even constant feature of the sexual constitution of the cases in the puerperal group.

4. As a corollary of the above, no clue as to prognosis or likelihood of development of a puerperal psychosis can be obtained from a study of the sexual life alone, and frigidity in particular forms no guide.

5. Masturbation and eroticism were only slightly commoner in the puerperal group, and cannot be regarded as characteristic or even particularly common features of the group. In the whole series of 100 cases masturbation only occurred in eight.

6. Masturbation itself as a symptom, even in a setting of clear consciousness, cannot be regarded as necessarily of evil prognostic import.

7. The attitude to both husband and child in puerperal psychoses is inconstant, and aversion to either or both is by no means constantly or even very frequently found.

The figures relating to previous attacks, taken in conjunction with those on the pre-psychotic sexual life, fail to support the view that the onset of a psychosis associated with childbirth is a product of a morbid sexual constitution, with the puerperium, acting as a specific precipitating factor. The latter must be regarded in the same way as any other precipitating factor whatever.

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A TOUR OF SOME MENTAL HOSPITALS OF WESTERN GERMANY.

By A. E. Evans, M.B., B.S., D.P.H.

On the evening of Monday, April 25, 1932, the members of the fourth Study-tour of Mental Hospitals met at Cleves, seven miles east of the Dutch-German frontier. Two of our party used a private car and the others a motor coach, into which we had detrained at Nymwegen. We were joined there by Dr. Kraus of Santpoort and Herr Rou, an able and zealous guide, whom the Hamburg-Amerika Linie had sent to ease our way, and facilitate our intercourse with the German colleagues receiving us.

The first hospital we visited was Bedburg-Hau, within two miles of the town of Cleves, where we spent a long morning seeing as much as possible of the three thousand patients in a very modern hospital colony. During the afternoon we travelled 140 miles to Bielefeld, our destination for the next two nights. Bethel, the colony which we saw on the Wednesday morning, is a philanthropic agency for the care of epileptics, insane and other needy classes. Apart from its efficient administration and good treatment of the mental patients, it was of interest, like another religious institution at Kork, in showing some of the means used in providing for the lower grades of mental deficiency, of which we saw so little in the ordinary mental hospitals.

The same afternoon and Thursday morning were spent at Gütersloh, a hospital with a wide reputation for securing a quiet atmosphere of industry, and a re-establishment of tolerable behaviour in place of turbulence. In order to remove any apprehension that we were missing any exhibition of such conduct, we made, by Dr. Simon's permission, a complete round of the women's section.

Leaving about midday on Thursday, we made a short run to Paderborn for lunch, and afterwards travelled to Giessen, where a reception by the University and the Deutscher Verband für psychische Hygiene awaited us in the Liebig Museum. A large company collected, several of whom returned with us to our hotel, including Geheimrat Prof. Sommer, the President of the Society just mentioned, and Prof. Fischer. Notwithstanding a late evening, the veteran professor of psychiatry met us at eight the next morning in his University Clinic, where he gave us an illuminating lecture on the evolution of the plan of a mental hospital.

The same afternoon we spent a couple of hours at the thoroughly modern clinic in Frankfort, and then passed on to Heidelberg, where we were presented on Saturday with a free morning; it was well filled. In the afternoon we visited Wiesloch, one of the four mental hospitals of the State of Baden; the situation of its villas on the thickly blossomed slopes of the hills was a striking reminder of our progress southwards. After tea we made a short call at Karlsruhe to see the Health House, a museum of hygiene, where mothers are taught very graphically how to care for their infants, and where a brief study of the models would go a long way to inform even the simple how to live as though endowed with wisdom.

Baden has a well-devised system of after-care, and each of its mental hospitals

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is responsible for a large centre of population; Wiesloch looks after Mannheim, and Illenau attends to the needs of Karlsruhe; many villages, too, are visited by the medical staff.

We passed on to Baden-Baden for the week-end, and were in time to see the Eve of May Huntsman's Ball at the Kurhaus, with its gay colours of mountain and national dress.

During the week-end we saw much of the spring grandeur of the Black Forest, and spent an instructive day at Hirsau in Würtemberg, at the sanatorium of Dr. Karl Roemer, who presses the atropine treatment of Parkinsonian states to its limits with considerable success.

On the last day we left Baden-Baden for Illenau, near Achern, where the Director is Dr. H. Roemer, who had organized our itinerary and obtained the invitations from our hosts. He was good enough to accompany us for the remainder of our coaching journey to Strasbourg, where we boarded our sleeper train for Ostend.

Bedburg-Hau.

This institution was built between 1908 and 1912 for 2,200 patients. Additional villas have since been erected, including one for dangerous criminal males and another for the isolation of typhoid carriers, mostly women. The accommodation has thus been raised to 2,700.

The estate, like much of this north-east corner of Germany, is very level; it covers over 540 acres, and its three farms, with their patients, are distributed with a view to economy in transport.

The plan of the outlay of the wards shows some ten irregular rows of villas, all having their gardens to the south. The sections for men and women are separated by nothing more than a broad hollow in the woods. Villas for the reception of new patients are near the front administrative blocks, while three grades of "restless" villas are grouped on the opposite side of the colony. The five villas of 100 beds each, for sick and infirm, form a group about the centre. Other categories are the "half restless" and the "quiet", and each has a group of wards. Single-story infirmaries for tuberculous and other infections stand on the fringe of the other villas.

The laundry, general kitchen, power-house and stores are all situated in a group at the south-west corner nearly in line with the administrative block, and the more distant houses for medical officers. On the north-west are numerous houses for the nursing staff, and houses for other officers are placed conveniently in various parts of the estate.

Like many Continental hospitals, Bedburg has the appearance of having been built in the woods, for trees have been grown thickly outside the ward gardens.

While the outlay is by no means formal, there is neither waste of space nor crowding of buildings. A miniature railway distributes food and stores throughout the colony.

In the entrance hall of the Administrative Centre there is a scale model of the hospital, about 20 ft. square, upon which the Director, Sanitätsrat Dr. Raether, commences his demonstration of the hospital to parties such as ours. He afterwards took us by the train to obtain a general impression, and later on foot through many of the wards and shops to view, in greater detail, the daily routine.

Some pleasing consideration is shown towards the patient and his relations immediately on his reception; they enter a parlour waiting-room and the patient passes on to the doctor's room, adjoining which is the bathroom, through which he presently reaches the ward; meanwhile the friends enter directly from the waiting-room, and see for themselves the bright and comfortable ward where the patient will spend the next few weeks. The admission ward has a subsection for noisy patients. This ward on the women's side contained 40 patients, which represents the female admissions for a month. The windows were tastefully

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curtained, and the floor was made of a rubber preparation. Five of the nine nurses were on duty.

Although occupation therapy is not always applied here in the first week after reception, it is one of the essential remedies, and even the invalids are considered, at a later stage, as to their fitness for " light duty ", occupations of a suitable type being devised for them. In all, some 85% of the patients are classed as occupied ; the bodily infirm account for a large part of the remainder, and some of the criminal patients for another part ; although many of the latter make cement bricks, the more dangerous were unoccupied indoors or playing skittles or billiards. This " criminal " ward has 65 patients and a staff of 27. Since it was first filled the admissions have averaged 30 a year ; few are discharged. In the single rooms for the most dangerous men there are vertical iron bars which separate them from both the door and the window, to which the nurse has access from the adjoining duty room. There are some associated rooms, but the nurses usually remain in the broad corridor. This is the only building of the corridor design ; in the others the rooms open from one to another and are large and square. This criminal house is the only one with a walled garden, and unlike other wards, it has a plain elevation without verandahs.

Following an outbreak of enteric fever in the Rhine province, which was traced to a patient discharged from a mental hospital, a villa of 110 beds for typhoid carriers was built. The women's section contains 73 patients ; on entering it we donned long white coats in the clinical room before passing into the ward, where the women were at needlework or looking at papers. Before leaving we first immersed our hands in lysol, then in a sublimate solution, and finally washed them and wiped our shoes on a mat wrapped in a canvas sheet soaked in lysol. One gathered that the number of discharges from this ward also is small—in the public interest.

The exterior of the villas is pleasing ; verandahs, in different forms, figure in the design of most of them. Two floors accommodate patients, and the top floor, with windows mainly in the roof, is for junior staff. The rooms are spacious and long galleries are absent, and so are padded rooms, but the continuous bath is used for periods of a half to eight hours.

One of the ten " open " or unlocked wards was occupied by 50 elderly women in the charge of one nurse. The best needlework is done here, but some of the patients so employed belong to other wards.

A ward of " quiet " men, some suicidal, contained 61 patients, 3 of whom were in the continuous bath ; the staff is 10, of whom 5 were on duty that morning. The average staff for the hospital is 1 to 8 patients, but in a ward of this kind it is 1 to 6. In the " restless " admission ward some men were making card boxes ; there were 20 patients, 5 of whom were in the continuous baths.

A female sick villa for 100 now contains 120 women ; many of them were knitting stockings. The beds were arranged in rows parallel with the windows, the usual method in Germany, and some were placed on the deep verandahs.

The general kitchen is spacious and the scullery is equally large ; the floors and the walls, to about 6 ft., were tiled in white, with brightly coloured patterns. In the centre of the scullery stood four large tiled tanks each divided into four compartments, and supplied with water by a single swinging tap—a prevalent economy in plumbing. One of the tank utensils was a giant perforated ladle, like an aluminium bucket on an out-size in broom-handles. This scullery and others, seen later, were well warmed with radiators. Potatoes were being peeled by about 100 women seated round the walls ; this mode of occupation is too useful here to be displaced by machines. One nurse supervised this company. The cooking equipment is much like our own. This building has staff quarters on its upper floors. The bakery is tiled similarly to the kitchen. White bread is baked for the sick, but the able-bodied patients eat a brown rye bread.

The laundry is also fitted with tiled tanks in a double row down the centre ; wooden tubs are in use as well. Above the washhouse is the ironing and drying

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department with such heavy machinery as the calender. The flexes of the electric irons run through upright iron tubes bent over at the top and clamped where required to the table edge. The output of the laundry is 5,000 pieces a day; this includes a daily clean towel for each patient.

In the engine-house we saw a long row of ten automatically fed boilers, installed in 1911, each having a heating surface of 100 sq. metres. It is worked by 3 men. The two steam engines are each of 600 to 700 h.p. Adjoining is the dynamo station with 50 electro-motors. The coal consumption is 7,000 tons a year.

In a group of workshops there were 40 men occupied under the direction of 3 tailors, and 35 men in the bootshop, where all the hospital boots are made. The book-binding shop employs 12 men. Many of these men wore print suits. Hospital furniture was being made in the joiner's shop; 10 men were occupied here, and there were no machines. About 8 to 10 men were painting. In another large room men were making cardboard boxes, envelopes, brushes, baskets, wicker chairs, mats and carpets. The mats are woven on long rods, some the thickness of stair-rods, others thicker; as a rule one patient weaves while another attends to the tautness; the rods are later threaded with rope which takes their place when withdrawn.

Some 45 men from an invalid ward were making cement bricks in their courtyard, with a staff of 3, and stacking them for sun-drying. The cement is mixed with sand and ashes. Many of these patients appeared to be cases of dementia præcox.

Other occupations of the patients are those of the field and garden, road-making, and attending to the wards and grounds, stores and stables, wire and cloth-weaving, straw-hat making, upholstery, barking willows and stripping tobacco.

The medical staff numbers 14, one of whom is largely concerned with the after-care of discharged patients; there is also a visiting surgeon. The nursing staff is 378, or 1 to 7·9 patients, and the entire non-medical staff is 529.

The accommodation is 2,700, but there are at present 3,000 patients in the hospital. The admissions number about 1,000 a year. Some 12% of the discharged are classed as "recovered" and 50% as "benefited". We shall see similar percentages elsewhere; they can be attributed to the development of after-care under the direct supervision of the mental hospital staff, which permits of the earlier discharge of patients than would otherwise be possible.

This hospital has no private wards but, if they are in a position to do so, patients pay 4 RM. (about 4 shillings at par) a day.

The organization of Bedburg-Hau is very far-reaching. Printed instructions are issued to help friends with the admission of patients, and pamphlets are published, with illustrations, showing details of hospital life. The hospital is the centre for the Society for Assisting Mental Patients of this province.

Bethel.

The Colony of Bethel at Bielefeld is one of about a score of institutions in North Germany founded by Pastor Count von Bodelschwing some seventy years ago, and now housing, in all, about 15,000 persons. The objects of this Mission include the care of—

(1) Epileptics, insane and cripples.
(2) Normal and abnormal children, and their education.
(3) Various classes of homeless people.

The colony at Bielefeld accommodates 2,250 epileptic persons of all mental grades. Some of them work in an establishment for the reception of household discards of all kinds, many old clocks, for instance, serving to construct one serviceable time-piece. The cripples manufacture aluminium ware, and work on machines where epileptics would be unsafe; the latter are, however, employed in the large smithy and in the cabinet-maker's shop.

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A research hospital is near completion where the metabolism of the epileptic will be investigated.

A villa for 75 insane epileptic women, with 14 nurses, contains a basement workshop where a spool-winder, devised by Dr. Schneider, the Medical Director, enables very dull patients to occupy themselves; it can be clamped to any table. Here and in other hospitals, many patients, whose capacity for employment is very restricted, spend part of the day peeling the white paper from the tinfoil of cigarette wrappers. Seven women sat at a table each doing a separate stage in the process of making paper bags. The seventh patient regarded her function as the most praiseworthy: using a wooden paper knife with a handle inclined at about 20°, she was busy separating those adhesions which followed the excess of zeal and gum used by her companions. The lower panes of the day-room windows were guarded with sheets of perforated zinc.

Nearby was a villa for 150 idiots, whose grade could not be disputed.

Under the direction of the clerk of works and his assistant, the colonists have erected a villa for 50 insane epileptic men. The roof tiles were made by colonists. Here, as in other continental hospitals, it is the practice to build small bedrooms for two. Although the seclusion of restless patients for brief periods is readily resorted to, the aggregate for the year amounted to no more than 23 hours; a few years ago it was 500 hours.

On the hillside above this new villa is an old farmhouse, now used for 24 old men, "retired" vagrants or psychopaths. Each receives 40 pfennigs a day if he works; his maintenance costs 1·20 RM. a day.

Of 400 mental patients not epileptic, 170 are men paying from 3·50 to 7 RM. a day. Their villa contains both "open" and "closed" sections, with workshops for weaving and other occupations. The outdoor gymnasium is provided with parallel and horizontal bars; a part of the garden slope was fenced off for sun-bathing; it had sand paths, shower baths and shelters. When the weather is too rough for gymnastics, the alternative exercise is wood-chopping under the open sheds. The men's occupations in the closed section were mainly book-binding, weaving and envelope-making. Where a patient is too introverted even to fold paper in the usual way, he is given a block of wood with which to press the sheet into folds. Similar patients, placed in contact with those who are engaged in some interesting handwork, are frequently found to take it up themselves without further persuasion.

The services of the staff of this well-ordered philanthropic colony are, in the main, voluntary, only the senior brothers being paid, and then only about £150 a year. The junior brothers and the sisters receive only a pocket allowance in addition to their board.

Gütersloh.

The Prussian Province of Westphalia has a population of 4,800,000, and there are nine public hospitals with a total accommodation of 8,400 beds for the insane, mentally defective and epileptic (1 bed to 571 of the population). The erection of the hospital at Gütersloh was begun in 1912 under the direction of Dr. Simon, the present Superintendent, but it was not completed until 1919. It was intended to provide 1,500 beds; so far, however, the accommodation is only for 1,240. The hospital estate covers over 447 acres, of which 125 are forest. There are 6 villas for men and 8 for women, and most of the villas contain three wards each with 40 to 55 beds.

Dangerous criminals are not received here, but at Eichelbon.

Dr. Simon's aim is to make patients ready to take up the duties of normal life as early as possible, by enabling them to regain sufficient self-control to conduct themselves reasonably in the world, or failing that achievement, to ensure that the patients who remain in the hospital are well behaved.

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The principles of his system include the following: The doctor gains a sympathetic understanding with the patient; there is no question of coercion or of punishment if the patient does not take part in the work treatment. The economic value of the work is not the prime object, but occupation must have some point in it and not be a useless performance. The work should be within the physical and mental range of the patient and, while it should be well up to his capacity, it should be constantly reviewed by the doctor to prevent the patient being kept at the same job when his capacity for it has diminished. In states of confusion, any processes attempted must be by slow small steps; half an hour a day thereat may suffice to give the patient the satisfaction of being a useful link in a chain of workers.

There is hardly any form of work that cannot be utilized in some of its stages. Dr. Simon favours the use of the routine needs of the hospital, especially open-air work, unless the state of the patient forbids it. Many kinds of occupation can be carried on in the ward day-rooms if the process be not too noisy or dirty. Work which patients can perform with therapeutic benefit should not be done by machines. It is a mistake to give a patient an occupation likely to perpetuate his delusional outlook. It seems to me that the keystone of Dr. Simon's principles is the elimination of maniacal activity from the patient's environment. He maintains that the boisterous and quarrelsome outbursts which we not infrequently see are the outcome of some exciting irritation in the patient's surroundings, rather than a necessary part of the clinical picture of the illness. He therefore takes steps to prevent one disturbed patient from exciting others to turbulent behaviour; these steps consist in the prompt isolation of any patient at the earliest sign of uncontrolled conduct, not as a punishment, but to prevent the spread of disturbance, and to give the isolated patient the best chance of speedily regaining the similitude of a balanced mind, and of returning to his occupation.

The methods of applying these principles involve a careful grouping of the patients and grading of the occupations. Newly admitted patients, who may be difficult, anti-social or noisy, are taken in groups of ten or a dozen under the close care of two of the most skilful nurses and a doctor, and, for short periods only, at the simplest forms of work, such as helping another person to carry a basket, turning a handle, teasing wool or other material, gumming paper bags, plaiting in a rudimentary form or helping to fill a barrow. The second stage is still simple and mechanical, but makes slightly more demands on mind and muscle or on co-ordination; carrying articles to and from the ward, sorting oziers, simple darning, hemming, laundry washing or brush-making, coarse weeding or assisting in house-work, all belong to this stage, in which groups of 10 patients may be employed under the direction of one carefully chosen nurse for a quarter or half of the day. The third stage of occupation calls for more attention on the part of the patient; it includes housework without supervision, sewing, basketry, peeling vegetables, garden or harvest work. The fourth stage requires still more mental effort, the patient's faculties being well on the way to normal and equal to certain conservatory jobs, taking shoots, planting out, lawn-mowing, attending to animals, carpentry, mending and sorting clean linen, making garments, weaving and office work.

For the patients who are not equal even to the first stage of work there are infant games, then dominoes, dice and cards, and, later, associated games and physical exercises.

The daily report for April 25, two days before our visit, mentions the "disturbed" patients by name, 11 men and 16 women. Three men and 2 women were secluded for a total of two hours; 1 woman was in the continuous bath for two hours; 10 men and 9 women were on sedatives; 1 man and 2 women were reported as "dirty with urine", but 1 of the women was a case of traumatic myelitis; 1 man was "dirty with excrement"; 6 men and 1 woman had had epileptic fits.

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On April 27, out of a total of 1,032 patients, 47 were on leave, 952 were occupied in the hospital, 21 were unoccupied on account of physical illness and 12 because of their mental state. Of those who were physically fit for employment, therefore, and not on leave, 98·7% were occupied. Outside these figures are 9 men who are boarded out.

During the year from April 1, 1931, 12 patients were discharged recovered, 270 improved, 39 not improved and 24 not insane. The large proportion of discharges classed as "improved" is partly attributable to the extensive use of after-care by the hospital staff, and to Dr. Simon's reluctance to retain a patient in an institution when he has regained enough self-control to carry on outside.

In the general kitchen about 60 women were peeling vegetables under the charge of one nurse in a spacious scullery with tiled floor and walls; near the centre were four sets of white tiled tanks, each divided into four compartments, like those at Bedburg Hau. All occupied rooms, even the scullery, are warmed by radiators. Over the kitchen are built workrooms and staff quarters.

In the main laundry there were 40 "restless" women, with one nurse, at the washing troughs, for the most part a bright and laughing group, quite ready to be diverted. Here also the floors were tiled in white, with patterns in vivid colours. The ironing room and calenders were upstairs; the finger-guard of the latter is better designed than ours, inasmuch as it is operated by pulling the device towards the worker instead of pushing it towards the cylinder.

Rooms for the lighter meals, second breakfast and 5 p.m. coffee are situated on the same floor as the ironing-room. The mending-rooms adjoin the ironing-room and the same lighter meals are taken here also.

Some of the men's workshops are semi-basement; in one of them a considerable number of the duller patients was employed in separating the white paper from the tinfoil of cigarette wrappings. Three patients were engaged on a simple-looking hand machine for weaving wire fencing, constructed by the firm of Oltrogge & Co., Bielefeld. Other crafts in this shop were weaving, upholstery and basketry. Inside a male ward was a bookbinding shop, with presses and cutters, and old men were winding up bandages and plaiting rope with which to make soles for cloth slippers. Twelve of this ward of 52 do housework, and the others are engaged on handicrafts. In the grounds nearby was a team of 16 men of low grade, using the long broom-handled spades of the country, under the direction of one male nurse.

A ward for "restless" men, some being fresh admissions, had a bright day-room divided up by light wooden settees, topped with flowers; the 42 patients were working in groups under the guidance of 4 nurses at the tables or looms or in housework; some looked readily excitable. The rooms open from one to another without corridors or galleries. Off the day-room was an annexe with kitchen, lavatories, and an office. On this office wall was a wooden frame with columns of tablets, on each of which was painted a patient's name with certain particulars. The columns were arranged according to the occupation, and the amount of it, prescribed by the doctor. A glance at this board showed the distribution of both patients and nurses. The less robust patients may be given work for a part of the day only.

In a large concert-hall we saw a class of about two dozen women, including some suggesting katatonia and mental deficiency, receiving instruction in physical training. This class is conducted twice a week by a nurse with secondary school training, but not qualified as a gymnastic instructor; another nurse was in the class with the patients, all of whom were clad in a loose gym dress; the nurses wore bathing costumes. Music was provided by a gramophone. This was an extraordinarily live performance, and the movements were more varied than one sees at home. We met the instructor next morning on the stairs with a small team of women scrubbing.

In the gardens 120 women are employed, some for the whole day. The soil

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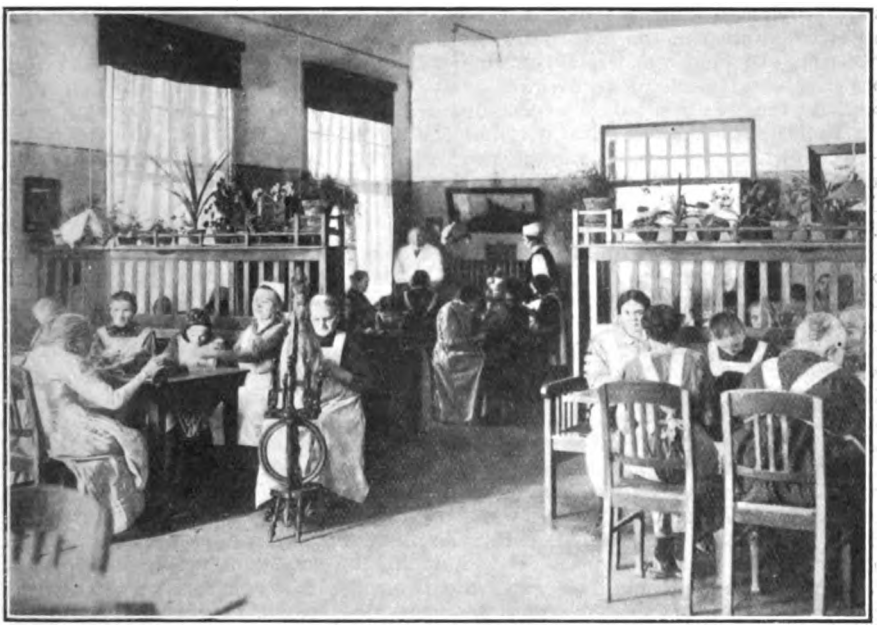
being sandy, it must be enriched, and teams of women help to make a compost and distribute it in small buckets of a size they can easily carry, and small enough also to ensure that there is work for all so engaged. There is one female nurse to twelve or fifteen women on the land. An elderly woman and another of about 20, both engaged over a cold frame, said they had done no garden work before coming to hospital. The tool-shed contained a large selection of spades and other garden implements of graduated sizes.

On our way back from the gardens we saw a ward set as it appears on Sundays, with men reading periodicals and playing table games.



Showing the division of a day-room into small groups of patients by open settles or settees with shelves for plants and flowers.

On Thursday morning we made a complete tour of the women's section. The most " restless " ward contained a number of the fresh admissions, for whom there are three wards in all. It was remarkably still, no talking being permitted except on the subject of the work in hand. The ward contained 43 women, 31 of whom were indoors with 5 nurses, the remainder were outside with 2 nurses. Four of the nurses form the permanent staff of the ward, while the remainder change wards frequently. Two women were in bed, one in a darkened dormitory and the other in a single room, the rigid rule being enforced of removing unsettled and excitable patients from all sources of excitement, whether of sight or sound. It is held that much of the motor activity, noise and destructiveness which is seen in states of mania is the result of irritation from without, and not an essential feature in the clinical picture.

Above this ward was another with 52 beds for recent admissions; of its 46 patients 16 were in the special laundry and in the gardens. The day-room was

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divided up, like others, by settees, and within each bay so formed, patients were sitting at tables knitting or sewing, 7 or 8 to a nurse. About 10 were separating the layers of tobacco wrappings; 3 were regarded as suicidal. The rooms were decorated on lines similar to the homes from which the patients come. For night use an electric light is provided on a bracket with the reflector upwards, giving a shimmer on the ceiling so as to avoid any unnecessary rousing of patients. The w.c. of these observation dormitories is fixed in a corner of the room in full view of the nurse, who thus has no occasion to accompany a suicidal patient out of the dormitory, leaving the other patients unattended.

This villa is the only one which has a walled garden; the others are generally bounded by a light fence. We heard that strong clothing had been used in the ward only once in four years. In the basement was a small laundry for the most unsettled women of the first and second admission wards; it was equipped with two rows of troughs, at which the women faced each other. While we watched the patients working one of them broke away from the others and directed some unpleasant remarks to a lady who accompanied us; the nurse, whose physique was of the best, quietly placed an arm round the disturber and walked with her to the adjacent little dining-room belonging to this laundry, where the patient became quiet in a few minutes. Immediately on our departure she was returned to her trough. The nurse keeps a record of all ward incidents such as this for the information of the doctor.

Another group of 54-bed wards housed the "half-restless" women, the best behaved of whom enjoyed the most liberally decorated rooms. Some of the wards had large verandahs and balconies without guards, but they are not used unless a nurse is present.

Several wards were nearly or entirely empty, the patients being at work elsewhere. An "open" ward of 65 beds and 63 patients had a staff of two nurses on duty. Occupations which were proceeding in the wards included knitting, hand and machine sewing, elementary weaving, the making of pillow lace, and the scraping of flock between wire brushes, one of which was clamped to a table.

Dr. Simon's attention was first directed to the benefit resulting from the occupation of recently admitted patients when he was under the necessity of getting certain outdoor work completed in his hospital many years ago. In order to meet the emergency he employed patients who might otherwise have been in bed, and, observing the good effects, he very gradually developed his present system, but refrained from publishing his experiments until, at a congress of alienists, he was provoked into a declaration of his method. Since that day his hospital has been visited by thousands of persons interested in the care of the mentally disordered, but our party were the first representatives of the United Kingdom.

There was definitely an atmosphere of industry throughout the hospital, and an absence of noise, destructiveness and faulty habits. It was clear that any exhibition of disordered behaviour was promptly dealt with by seclusion for as brief a period as might be effective. Aged patients were not very noticeable.

The following facts emerge from this brief visit:

(1) The means of occupation are provided by the ordinary work necessary to the institution; very little in the way of fancy crafts is undertaken.

(2) No special occupation therapy officers are employed, but all the doctors and all the nurses are all-in for the treatment and improvement of the patients.

(3) Apart from the workshops there are no special occupation therapy rooms; the work treatment is carried on in the wards, which themselves largely serve as workrooms.

(4) The proportion of staff to patients is large where it is required, but in the quiet or chronic wards it is probably less than in England and Wales. Owing to the manner in which Dr. Simon's principles are carried out, the energies of the staff are not absorbed in dealing with the excessive motor activity of unoccupied patients.

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After-care.—During the last two years Dr. Wernicke, one of Dr. Simon's assistants, has spent seven days a month, with the help of a district nurse, visiting discharged patients in their own towns and villages, using as a consulting-room the office of the M.O.H.

Detention of patients in a mental hospital in Prussia is effected by an order made by a member of the Landgericht, the lowest rank of judicial bench. It may be obtained by the Director of the hospital or by the friends of the patient. The order is accompanied by a history of the case, and a declaration by a doctor with a consent for admission from the patient's parish.

Patients are also admitted on a medical certificate at the request of their friends, as in the "*placement volontaire*" of France.

The University Clinic at Giessen.

Our visit began at an early hour with a lecture by Prof. Sommer, the President of the Deutscher Verband für psychische Hygiene, who traced the decay of the study of psychiatry from the enlightened period of the sixteenth century, owing largely to the Thirty Years' War and the subsequent rise of the study of philosophy, during which, however, outbursts of introspection among the great writers gave some impetus to psychology. The study of abnormalities brought to light the earlier state of progress, but parsimony prevailed in the matter of accommodation, and such formerly monastic buildings as were not appropriated for municipal buildings or hospitals became asylums. The builders of new mental hospitals, in a later period, when special establishments were erected, copied the monastic plan. The single room persisted, not because it was wanted, but because it was in the architectural tradition of the monasteries. At Heidelberg a beginning of the dormitory plan appears, but in the Leipzig Clinic many single rooms were built. Attempts at classification followed, but corridors still remained a feature. Later the plan of detached villas with a special building for admissions was conceived.

The Clinic at Giessen was established in 1896 and, as might be expected of a hospital erected over thirty-five years ago, it retains some of the features of that period. The out-patient department was one of the earliest. Through it the system of voluntary admissions came into use. The number of patients treated last year was 1,020, the men being nearly twice as many as the women. Some remain three or four days for observation and others for several months. Fifty per cent. are regarded as sane.

There are six separate villas for about 100 patients in all, three for men and three for women, a central kitchen and a building for out-patients and administration, including laboratories, lecture-room, library and offices. One villa of twelve beds, on each side of the Clinic, is locked; the others are open. In one of the wards there was a handy iron frame, like a bed end on wheels, for moving beds; it could be hitched on to a bed of any size.

The garden walks are designed to afford a graduated release from observation.

The medical staff consists of seven, in addition to the Professor; they are a chief physician, four paid and two unpaid assistants.

Being persuaded of the need for repose by the inhabitants of busy centres of population to preserve their mental balance. Prof. Sommer has pressed, for many years, for the provision of rest-rooms where quietness may be secured and possibly sleep. Several have been erected in response to his advocacy, and garden courtyards have been added to some of them. A charge of a few pence is made by some local authorities for the use of these rooms. In the early days hotel proprietors thought they detected a municipal rival in these shelters and offered a transitory opposition. This aspect of social psychology is brought to the notice of the university students, who enjoy opportunities for rest in the Clinic gardens.

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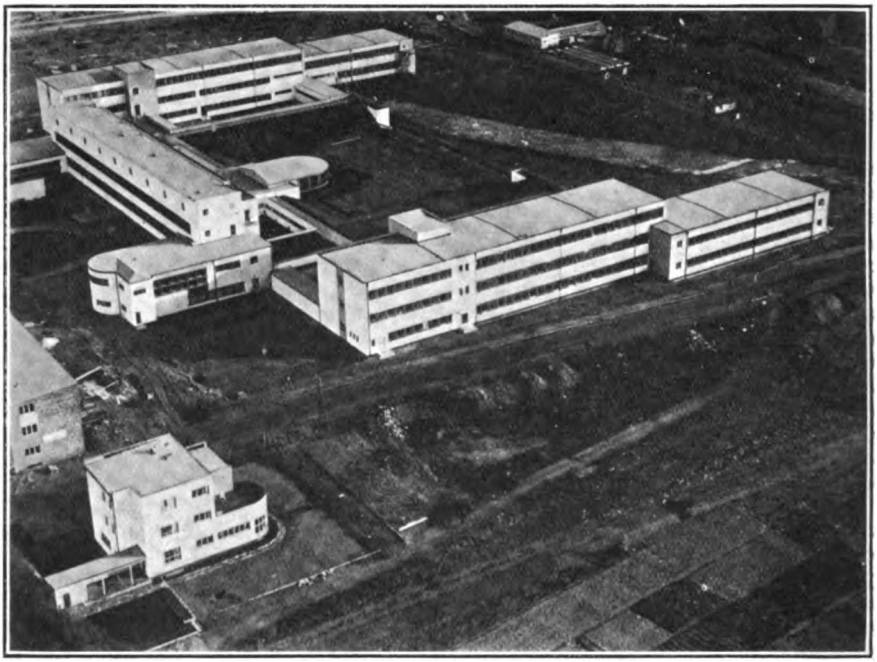
The Frankfort Clinic.

This clinic was built by Prof. Elsaesser at a cost of three and a half million RM., and completed eighteen months ago, when the equivalent in sterling was about £180,000. In design the massive squareness of Assyria is dominant. The roofs are flat and largely utilized as outdoor space; the windows are edged in blue and the intervals coloured black, giving a horizontal emphasis.

The building plan is a square "U". The centre contains offices, residents' quarters, laboratories and the out-patient rooms; the right wing is for men and



University Psychiatric Clinic at Frankfort-on-Main.

the left for women and children; the wards occupy the ground and first floors, and the second is for nurses, who are all trained before they are engaged here. The sisters come from a general hospital, and many of them are at present holding subordinate posts owing to the unemployment in their profession.

There are twelve medical officers, of whom six are resident without a time-limit. Their rooms were built so as to render possible a large economy in furnishing. Most of the doors of the Clinic are of wired opaque glass set in steel frames, and the entire structure is regarded as non-inflammable. There is a remarkably good library, with an extensive list of periodicals. Adjoining the laboratory is a room for shooting cinema films, and on a lower floor a theatre for exhibiting them. The laboratory has a psychological department, and considerable space is devoted to the anatomical and bio-chemical sides of investigation, but neither here nor in the other hospitals did we find very special attention given to the search for sepsis.

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Out of 2,000 admissions, 500 patients have proceeded to a mental hospital—the same ratio as at the Hôpital Henri Rouselle in Paris in 1928.

The duration of stay here is from a few days to six months. A small number of admissions come through the police on account of their dangerous conduct, but patients come here mainly through the insurance societies and the local authority, and a few privately.

The Director's office consists of the following suite:

Patients' examination room.

An office well furnished with cupboards.

A telephone exchange, which is the room for the lady secretary and clerks.

Patients' waiting-room.

The out-patient department has two waiting-rooms—for men and women. Near it are the cubicles for radiant heat and light therapy, with several bath-rooms. The lecture theatre is very well equipped. The men's section has 124 beds distributed through four wards; two of these are for "restless" men, one for the psychoneuroses and the fourth for quiet psychotics; it remains unlocked even at night, and in it no isolation is permitted. It contained 24 men, 8 of whom were in bed; small dormitories are provided, and there are clinical and waiting-rooms in addition to the usual offices. The mechanism of the ward windows is elaborate: the top and bottom quarters swing open horizontally, while the middle quarters are of casement type, but louvred all over.

There are no female nurses for men, nor did we see them elsewhere.

Patients are occupied in ward work and in the gardens, as well as in the sewing-rooms; the men make mats, envelopes and other articles.

There is a church, in which the altar can be screened by folding doors and the hall used for the patients' lectures and entertainments.

The steam for the kitchen is provided by the electric power station, which is situated across the road. The kitchen and scullery shelves are of strong wire.

A striking feature of this hospital is the amount of space given to laboratory investigation. The fact of its erection during such hard times is evidence of the confidence of the local authority in the remedial efficacy of such a unit.

Wiesloch.

This hospital was built between 1903 and 1905, on the villa plan, for 200 patients, but was enlarged from time to time to take 1,136 beds. It is now overcrowded, having 1,450 patients, men and women in nearly equal numbers. Its 67 buildings are pleasantly distributed along the winding roads of this undulating site at the foot of the hills amid an abundance of spring blossom.

One villa is for 35 alcoholics and psychopaths. In order to reinforce his treatment the medical officer of the ward is a total abstainer. The rooms are very pleasantly furnished, but the ward is of the "closed" type. The criminal insane occupy a villa the courts of which are secured by 20-ft. walls. The more dangerous men have single rooms 15 ft. by 7 ft. The thick glass windows are not shuttered; their apertures are controlled from the corridor. A funnel in the duty-room passes through the wall by a pipe by which the patient obtains a drink on request. Most of the men were doing various handicrafts in the garden—plaiting rope, basketry, hair-sorting. They were being encouraged in their labours by a patient at one of the windows, who loudly voiced the hope that the English and French would shortly bomb the hospital and set the patients at liberty. The bowls and cups of this villa are of papier mâché The staff in the hospital generally is 1 to 5½, but in this ward it is 1 to 2½.

The women's admission ward contained 53 patients; those who are noisy are sent direct to the ward for such women. It is the custom here for them to spend as much time as possible in the verandahs or garden, where, in the shade of the trees, there is a liberal supply of chairs, basket couches and tables at which

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some of the women were doing needlework. This villa had wards on the ground and first floors; the second floor is occupied by nurses.

A ward built for 60 now houses 76 old and infirm women, whose nurses number 19. Upstairs was another ward with a large balcony guarded with a wire screen, for the treatment of tuberculosis.

The next villa for quiet women was a very pleasing and industrious one; nearly all had some sewing or machining to do; this was a closed ward, but adjoining it was an open one, attractively furnished with gaily painted chests; one room had four looms. Some patients were using squared paper for tracing lace patterns, others had frames on which to fix linen for embroidering; mats were being made with a wool cable which produced a firmer article than the plain wool; a few patients were drawing with crayons; there were brushes on show which they had wired. This ward also had a verandah of really useful dimensions.

In contrast to the rest of the hospital was the ward for noisy women, to which only a small number of our party was admitted. These women were indeed justifying their title; several were in single rooms or continuous baths on account of excitement. This ward of 60 has 17 nurses, 10 being on duty by day together, and 3 by night.

The hospital estate covers over 230 acres, and an additional 46 are leased. At a distance of five miles is a separate establishment, "Mingolsheim", with a staff of 6, for about 80 quiet women; it is visited twice a week by one of the medical officers. Meals are conveyed there twice a day in a motor van, similar to that at Bangour, which distributes meals to the villas as well.

Including the Director, Dr. Gross, there is a medical staff of 12. The nurses number 331 and the servants 140.

It appears that there is no equivalent of the Committee of Visitors, the oversight of the management falling on the two representatives of the State of Baden, a doctor and a lawyer, who pay two visits a year, but the State holds the purse-strings tightly as regards any fresh expenditure.

A copy of the dietary was kindly furnished; this will be discussed presently, together with that of Illenau.

Hirsau.

The sanatorium of Dr. Carl Roemer has accommodation for about 50 private patients. Of late, particular attention has been devoted to the treatment of the sequelæ of encephalitis lethargica, and this was the reason for our visit.

The sanatorium lies in a sunny valley of the Black Forest of Würtemberg. For a private institution of this size, there is a particularly well equipped laboratory for bacteriological, biochemical and X-ray investigations, and a small cinema room, where Dr. Roemer gave us a vivid demonstration of films showing the progress of the patients under the special intensive atropine treatment which he has employed since 1924. It is founded on the tolerance of these patients for this drug, which was described by Dr. Brenner of Munich.

He begins with a small dose, $\frac{1}{4}$ mgrm., or $\frac{1}{200}$ gr., thrice daily. On the second day the morning dose is increased to $\frac{1}{2}$ mgrm., the second and third doses remaining at $\frac{1}{4}$ mgrm. On the third day, the afternoon as well as the morning dose are increased to $\frac{1}{2}$ mgrm. By such $\frac{1}{4}$ mgrm. advances, on the tenth day, each of the three doses is 1 mgrm. Dr. Roemer proceeds in this way until an effective dosage is reached as judged by the patient's progress, and he then continues the administration of the drug at that dosage. In 30 cases, on discharge from the sanatorium, the dosage was 5 mgrm. thrice daily, which is regarded as a proper limit for patients over 50 years. In 40 cases the dosage was 10 mgrm. The highest quantity maintained without "disturbing toxic effect" was 60 mgrm. thrice daily. When the drug is given by injection, only two-thirds of the oral dose is required.

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Speaking of his experience of this therapy in 300 cases in this sanatorium, Dr. Roemer finds that women taking atropine, get through pregnancy and childbirth without any detriment, and that the healthy infant so bears the drug that nursing need not be prohibited. About the age of ten the maximum dose is usually 2 mgrm. thrice daily. During intercurrent illness involving the stomach, the drug is given by suppository or by injection. Sialorrhœa usually disappears in 2 to 4 weeks, and many of the patients regain well-controlled movements in 3 to 4 months.

Cessation of the administration of atropine is attended with nausea, weakness and sweating, which rapidly respond to an injection of atropine. The main toxic symptoms, he finds, are paralysis of accommodation, dryness of the mouth, anorexia and nausea or vomiting, palpitation, vertigo, insomnia and " bladder trouble ". Hallucinosis and depression occur alike in patients who are taking and those who are not taking the drug.

Accompanying this special therapy at Hirsau are massage and gymnastic exercises, which are ingeniously elaborated for each patient's needs. We saw, on the films and in the garden, some thoroughly good physical training directed by one of the nurses. Hydrotherapy is also employed and the afternoons are devoted to games. Dr. Roemer finds that half his patients return to their own work; the others obtain some lighter employment.

Other remedies tried here have been harmine, scopolamine, genoscopolamine, genatropine, the d-hyoscyamine and the l-hyoscyamine and, more recently, the Italian drug eustateine. The strength of belladonna is considered to be too uncertain. Not one of these substances yields the results in Dr. Roemer's hands which he obtains with atropine. His chemists put up the drug in tablets coloured according to the dose, in quantities calculated to last for certain periods. Dr. Roemer is emphatic on the need for keeping a patient under institutional observation during the period of increasing dosage. Periodic gastric analysis is employed to regulate the administration of atropine.

The sanatorium contains some very pleasant suites of rooms at very reasonable rates. Dr. Roemer is assisted by his son, Dr. Helmuth Roemer.

Illenau.

This hospital, built in 1842 is, like Wiesloch, under the control of the Ministry of the Interior of the State of Baden. It is 1½ miles from Achern, and stands at the foot of the Hornisgrinde. Patients maintained by public funds come only from mid-Baden, but private patients may be admitted from any part of Germany, many such being voluntary patients received under the Act of 1910 of Baden, their admission and discharge occurring without any formality whatever. The charges for the three classes of accommodation are fixed by the Ministry.

In addition to the Director, there are 9 medical officers and 2 clinical assistants. The nursing staff is 204. The number of beds is 720, and the admissions during 1930 were as high as 891, of which 23% were voluntary. The discharges were 675, and 99 were transferred to other or to State hospitals. There is therefore considerable movement of patients.

The rooms for the reception of patients are particularly attractive, resembling those of a comfortable dwelling-house.

Through the munificence of the husband of a former patient, a house of 7 beds has been erected on the hospital boundary, where first-class female patients are received on a voluntary basis for an inclusive charge of 7 to 9 RM. a day, or about 50s. a week at par.

The admissions are divided into three groups—the quiet, the restless, and an intermediate. The neuroses are treated by psychotherapy, general paralysis by malarial inoculation and other remedies; the psychotic are induced, as far as possible, to cultivate a sense of responsibility and self-esteem. The application

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of psycho-analysis is extended to the schizophrenic cases; with it is combined work treatment as practised at Gütersloh, but physical exercises and games play more prominent part here than at other public hospitals in our itinerary.

During the morning a large class of women, most of whom were recently admitted, was carrying out exercises of a novel type under the direction of a lady from Karlsruhe, who conducts four classes a week here—one for beginners, one for other patients, one for sisters and another for nurses. The expenses, about £60 a year, are covered by a legacy. The programme included slow-arm wheeling movements to music, free hopping and reassembling with arms extended, lunging, Greek and rhythmic dances, somersaults and ring games with a large ball. The various exercises were well distributed and the patients co-operated heartily, although one or two looked less alert than the others. A waltz and a rousing polka, played by a friend of the hospital with exceptional skill, were followed by a rest, during which the patients, who wore gym. dresses, reclined on rugs on the floor before returning to their wards. Although we did not see them perform gymnastic exercises that morning, equipment for the purpose is provided.

We were yet more impressed by the type of male patient who had been induced to join the classes in the courtyards of the wards for the "restless". Each class was formed of about 14 men, several being of a very alienated appearance; they performed on the vaulting-horse, and went through several ordinary exercises and simple squad drill. The classes were conducted by two of the male nurses, and were clearly a notable achievement. These two wards contain 64 patients, the staff for whom is 16, 4 being on night duty, and 6 on duty on the day of the visit. Since the introduction of the physical training the nights have been noticeably quieter. Meals here are usually taken out of doors.

A patient, on showing signs of becoming noisy, is promptly isolated in a single room, but the earliest opportunity is taken of bringing him out again.

A wide "open" ward for 25 men communicated by a verandah with the book-binder's shop, where, on the wall, was a tool-board so designed that the absence of any tool would be obvious at a glance.

The older part of the hospital is occupied by private patients, but the original interior has been largely replaced. The upper windows open widely, but are guarded by iron frames whose pattern coincides with that of the panes. Pairs of beds standing together are separated by wooden screens. The water-closets can be locked from within by patients, but each nurse has a key. There were patients' food lockers below the windows, with gratings in the wall allowing good ventilation.

As in France, the mental hospitals in Germany cultivate and prepare many of their drugs, and the pharmacy department figures prominently. Each ward possesses a considerable variety of medicines, and the State regulations require the stocks to be kept up to schedule by the hospital pharmacist.

A great deal of needlework and weaving was going on in the women's wards, as well as various other useful handicrafts.

In the light-therapy room, formerly a kitchen, were a mercury vapour lamp and a Zolucks lamp for certain skin cases, a radiant heat apparatus, four-cell baths, shower-baths and tubs for foam and CO_2 baths.

The new kitchen is a very spacious one, after the design of those seen at Bedburg-Hau and Gütersloh, tiled in bright colours, and liberally equipped with tiled tanks for soaking vegetables.

The kitchen staff and patients are regularly examined for intestinal infections in the hospital laboratory, where we learned that the percentage of admissions giving a positive Wassermann reaction was 8.

The hospital is very well provided with means of entertainment, including a cinema, magic lantern, radio broadcast throughout the wards, dancing, tennis and bowls, as well as a large library.

While the statistical aspect of the occupation of patients is not emphasized, it is clear that a very considerable proportion of patients not confined to bed are

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engaged in physical training, or in some useful work available in the wards, shops and farm, and that the atmosphere of the hospital is a genial one. The lines of approach in the individual case and the modes of treatment are very comprehensive.

The population of the State of Baden is about two million ; it has four mental hospitals and two clinics with a total of 3,400 beds. There are, however, other hospitals where patients are mixed with the sane sick, much as in our Public Assistance Institutions. Eleven per cent. of discharged patients are transferred to these 9 " nursing hospitals ", from which they can only be discharged with the consent of the Director of their mental hospital. We gathered that many epileptic and mentally defective patients are accommodated in them.

After-care in Baden.

The State is divided into districts for the assistance and care of discharged patients ; each district for this purpose is in the charge of one of the mental hospitals, one or more of whose doctors, with the help of an attendant and two nurses, visits certain centres once or twice a week. In this way Wiesloch Mental Hospital supervises about a hundred patients in its immediate environment, over 60 in Pforzheim, and over 1,200 in Mannheim. The Illenau Hospital supervises discharged patients in Karlsruhe, where there are over 400 on the list. A separate register is kept of patients who do not require such help. Where patients are averse to supervision it is not exercised.

This measure of after-care reduces the period of stay in hospital, and is considered to prevent many re-admissions.

Diet in Baden.

Copies of the dietary for the week May 2 to 8 of the hospitals at Wiesloch and Illenau show the differences in the service to the various classes of patients. Slight modifications in the late tea on three evenings are made at Illenau between the third-class patients who work and those who are idle. At Wiesloch the third class does not partake of the light second breakfast. The soups are mainly legumes and cereals ; they form part of both midday and evening meals. Roasts, in the form of pork and veal, appear in one third-class dietary on two days and fish on another, the remaining dinners consisting of soups, herbs and vegetables, but various forms of sausage, cold meat or herrings form part of the evening meals.

In the other hospital beef in various forms appears three times, and sausage, fish and poached eggs on spinach once each. The dietaries of the other classes contain a greater variety of articles cooked in diverse ways ; they seem to differ much from British meals. A passing glance of the patients reveals nothing amiss with their food.

Kork.

The last institution which we visited was the hospital for epileptics in the village of Kork, near Kehl, opposite Strasbourg. It was founded in 1892 by the National Home Mission Society of Baden to provide instruction and training. Its four buildings accommodate 250 children and adults, male and female, many of whom are now either demented or psychotic. The staff numbers about 80, of whom 42 are nurses or teachers. A clergyman is Director, and there is a physician in charge, as well as a manager.

Only severe cases of epilepsy are admitted, and of this we had ample evidence on visiting the wards. The discharges do not exceed 3 or 4 a year. There are, however, sufficient able-bodied patients to cultivate the gardens—some 30 to 40 acres.

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Treatment is practically confined to bromide preparations; luminal is considered insufficient for the severer cases. Ketogenic medication is not employed.

The visit to Kork was of particular interest in that it showed us one type of institution where the idiot and imbecile epileptic patients are accommodated in Germany, these grades being very inconspicuous in the hospitals we had previously seen.

Summary.

Summarizing the impressions of the tour, one can say that:

(1) There is a comparatively easy admission, similar in Prussia to the "*placement volontaire*" of France, in which the friends can obtain the admission of a patient, furnished with a medical certificate. In the State of Baden the patient can obtain an informal admission and discharge for himself on a voluntary basis.

(2) Owing to the way in which after-care is linked with the hospital administration, early discharge is the practice, and the period of stay of patients in hospital is shortened, and readmissions are often prevented.

(3) The hospitals are under the management of the State and not of local committees.

(4) The proportion of medical and nursing staff is higher than in England and Wales.

(5) Where the employment of patients is thoroughly taken in hand the wards are quiet and free from excess of motor activity, and there is a great reduction of dirty and destructive habits.

To achieve this standard of restoration of reasonable behaviour both the medical and the nursing staff study the individual patient, and devise means for inducing his co-operation in the work of the hospital. Fancy handicrafts are little used, but physical training plays a large part in the early remedial endeavours. We have a long way to go to bring our own hospital patients to the level of occupational interest and self-control attained in most of the German hospitals which we visited.

An opportunity will be offered in a few months of seeing the Gütersloh methods in operation nearer home and at less expense, Dr. Kraus, of Santpoort, near Haarlem, having been good enough to invite members of the Association to pay a visit of two or three days to his hospital, where Dr. Simon's system was introduced five years ago.

(6) Our German colleagues were glad of the opportunity of renewing contact with our Association.

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Clinical Notes and Cases.

ABSENCE OF LEFT RESTIFORM BODY RESULTING FROM INTRACRANIAL BIRTH INJURY.*

By J. M. MACKENZIE, M.B., Ch.B.Glas., D.P.M.Lond.,
Deputy Medical Superintendent, Hollymoor Mental Hospital.

THE patient, a boy, W. B—, æt. 10, was admitted on September 23, 1929. Prior to this he had been a patient in a children's hospital. From there he was transferred, on June 15, 1928, to the observation ward of a Poor Law institution on account of his abnormal conduct and the fact that he was a bad example to other children. He became unmanageable in the Poor Law institution and was certified and admitted here.

The facts stated in his certificate were as follows: "With only very short intervals he raved, shouted, made uncouth noises, banged his head, threw himself about, bit at things, and failed to pay any attention to what was said to him."

His birth had been a difficult forceps delivery with much bruising of the head, and in childhood he was given to striking his head with his hands for no apparent reason. Though his parents state he was alert mentally, it was not until he was nearly eight years old that he went to school, where he remained for a year and is said to have made good progress. He became excitable and noisy about Easter, 1928, and had to be removed from school and put under institutional care as above noted.

On admission here he was in a semi-stuporose condition, but he soon became violently excited, threw himself out of bed, and repeatedly struck his face and head with his fists. This phase continued, and on October 7, 1929, two weeks after admission, it was found that he had an abscess in the nasal septum, which was opened and drained. He became somewhat more amenable, and for the first time full physical examination was possible. The viscera in the chest and abdomen revealed no sign of organic disease. The positive neurological signs were as follows:

Legs.—Marked hypotonia on both sides, with increased knee-jerks and

* Read at a meeting of the Northern and Midland Division held at Rubery Hill Mental Hospital on October 27, 1932.

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ankle-jerks, the left in each case being more marked than the right. Plantar reflexes blunted, but flexor. No clonus; no true Rombergism.

Abdominal reflexes.—Right absent, left present.

Cremasteric reflexes absent.

Eyes.—Pupils equal and reacted normally. Fundi normal. There was a concomitant internal squint in the left eye. Movements were full and there was no nystagmus.

Arms.—Triceps and supinator jerks more active on left side. There were constant coarse choreiform movements of the head and arms with much asynergia.

The boy was pale and thin, and the possibility of one or more latent tuberculomata in the cerebellum was considered, in spite of the fact that there was no definite evidence of increased intracranial pressure. An X-ray of the head showed no abnormality. The Wassermann reaction was negative. He received some necessary dental attention, but this removal of a possible source of reflex irritation made no difference to his restless and noisy condition.

Liquor arsenicalis and various sedatives were tried, but in no case did any real benefit accrue. Unless he were actually kept asleep the coarse, uncontrolled movements continued and he received many self-inflicted bruises on the head and face. Asked why he struck himself, he always replied, " I can't help it."

This state of affairs continued until on April 6, 1931, just over eighteen months after admission, he had an epileptiform seizure and became unconscious. There were no localizing signs of any new intracranial lesion. His temperature rose to 105° F. in an hour, when he had a similar seizure. He died two hours later.

Post Mortem Examination.

In deference to the wishes of his parents the *post-mortem* examination was confined to the contents of the cranial cavity.

The scalp and skull were normal. There was no convolutional change such as might be associated with mental deficiency. There was a considerable amount of generalized œdema of the brain.

The right olive was much smaller than the left, and there were stringy adhesions of pia-arachnoid from the left side of the cord and medulla to the left side of the cerebellum in the region of the flocculus.

On transverse section at different levels the following facts were ascertained:

(1) *Section in lower olivary region.*—On the left side no communication whatever existed between the medulla and cerebellum, and the restiform body was poorly defined in contrast to that on the right side. The right olive was much smaller than the left (Fig. 1).

(2) *Section of mid-olivary region.*—On the left side there was complete

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absence of communication between the medulla and cerebellum. On the right side there was full communication *viâ* the restiform body. Again the right olive was much smaller than the left (Fig. 2).

(3) *Section at junction of medulla and pons.*—There was communication on both sides between the brain-stem and the cerebellum, though on the right

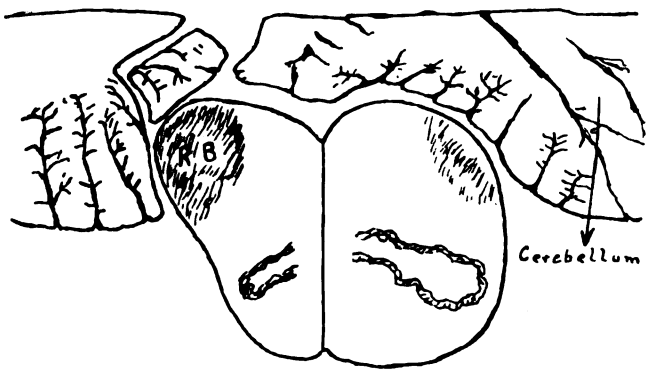

FIG. 1.—SECTION IN LOWER OLIVARY REGION.
Note, on right side, small olive and well-defined restiform body; on left side, normal olive and poorly-defined restiform body.

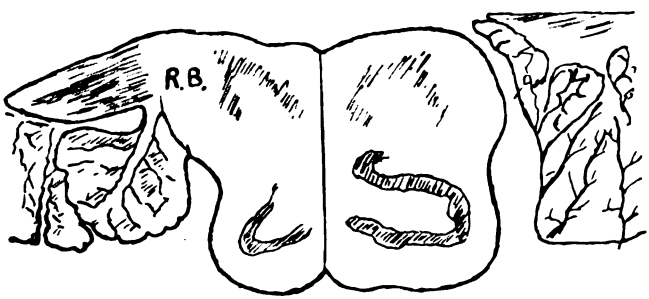

FIG. 2.—SECTION IN MID-OLIVARY REGION.
Note, on right side, small olive and complete union with cerebellum *vid* restiform body; on left side, normal olive and absence of union to cerebellum.

side the strand was rather thicker than on the left. On the right side the seventh and eighth cranial nerves are seen in section. The superior and middle cerebellar peduncles were complete on both sides.

COMMENT.

We appear to be dealing with a case of absence of the left restiform body, and it seems reasonable to suppose, in view of the history of difficult delivery

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and life-long abnormality of movement, and of the presence of adhesions of pia-arachnoid in the vicinity, that the restiform body was torn at birth. The fibres which run in this structure are afferent and may be divided into three groups:

(1) From the cells of Clarke's column in the cord *viâ* the direct spino-cerebellar tract of the same side.

(2) From the nuclei gracilis and cuneatus of both sides *viâ* the arcuate fibres.

Both the above are derived originally from the fibres of the posterior nerve-roots, and their function is concerned with the co-ordination of muscular movement and the maintenance of equilibrium.

(3) From the olive of the opposite side. There is no definite evidence as to the ultimate place of origin of these fibres, but in the mid-brain a large descending tract which ends amongst the cells of the olive has been demonstrated by Flechsig and Bechterew. This has been called the fasciculus thalamo-olivaris, but whether it originates in the thalamus or higher up in the cortex is doubtful. It is, however, significant that it has been pointed out that there seems to be a direct relationship between the size of the olivary nucleus and the extent of the cortical area which presides over highly skilled movements.

We have here a case characterized by gross failure of co-ordination of muscular movements, dating probably from birth, with *post-mortem* evidence of severing of a structure the function of whose constituent fibres is that of muscular co-ordination and regulation of fine movements.

Though the boy's standard of general knowledge was poor, this was not so much due to mental deficiency as to the fact that his physical disability had precluded him from attending school, except for a period of one year. The ability to learn was there, but the opportunity was lacking.

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Part II.—Reviews.

An Introduction to Analytical Psychotherapy. By T. A. Ross, M.D., F.R.C.P.E. Edwin Arnold & Co., 1932. Demy 8vo. Pp. viii + 204. 10*s.* 6*d.* net.

The special value of this book lies in its " personal " touch, its lucidity of exposition, and the living picture that it gives of the author's practice. He introduces us to patients who seem to be real human beings and not merely systematized " entries " in a case-book. The book will serve a very much wider purpose than that of teaching a particular theory and technique of mental treatment. It should serve to acquaint the young physician with a relationship to his patient and a conception of disease he has not been taught in hospital. In the medical schools our attention is concentrated upon the material process underlying the symptom. To the student, the organic lesion or derangement of function is the reality of disease. He finds direct physical diagnosis more satisfying to him than any induction from symptoms and case-histories.

When thereafter the graduate is confronted with a case of functional nervous disease, he is tempted to bully or neglect it, as being due to imagination or " self-indulgence ", without ever inquiring why anyone should imagine or enjoy suffering. Or, dismissing the patient's whole story, circumstances and personality as irrelevant, the physician confines himself to the study of bodily function, in the blind hope of discovering something that will justify treatment. Dr. Ross's book, however, should serve to introduce the beginner to a kind of " trouble " which can only be regarded as " disease " in a purely metaphorical sense, since it really consists in a disturbed emotion-interest relationship between the patient and the people and things he cares for. Such a patient must be treated, not as a collection of organs and tissues, or a mechanism which has gone wrong, but as a human being like the physician himself. The physician should regard this kind of illness as a miscarriage of upbringing, as a halting or wandering from the " pilgrimage to maturity ", as a state of strain and unhappiness resulting from domestic, social or other misfit, and from " untoward circumstances " generally.

It is difficult for the student, crammed with schedules of facts, trained in the physical diagnosis of " hospital cases ", to adapt himself to a personal relationship with his patients—even to such a degree as is required in general practice. Dr. Ross's book, besides being an excellent introduction to mental hospital work, offers invaluable illustrations of the " human " side of medicine. His insistence upon self-criticism, too, is most admirable ; and, since precept

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is no use in such a case, he rubs the lesson in by self-revelations that are little short of heroic.

As between the different "schools" of psychological medicine, Dr. Ross is scrupulously fair; any resulting appearance of eclecticism is inoffensive in an exposition whose aim is practical. The scientific and philosophic facts and hypotheses which underlie all systems alike are expounded with admirable lucidity—notably in his defence of the *hypothesis* of an "unconscious" mind on heuristic grounds (p. 29). The case for psychological medicine has never been better put before the general profession. IAN D. SUTTIE.

Fields of Psychology: A Study of Man and His Environment. By GLENN DEVERE HIGGINSON. London: George Allen & Unwin, Ltd., 1931. Demy 8vo. Pp. 615. 15*s*. net.

The author reviews several of the broadest fields of psychology, in the hope that the book will introduce students to the outstanding problems and methods of this science. The text-book begins with chapters on consciousness, behaviourism and Gestalt. Part II of the book describes the doctrine of evolution, animal psychology, and the development of the human race, the group, and individuals respectively. Applied psychology is reviewed in Part III, the topics covered being those of education, industry, advertising, and law. The concluding chapters concern abnormal psychology, which, however, does not pretend to be more than an elementary introduction to psychiatry.

The author has succeeded in introducing to students an enormous amount of information. The chapters on biological trends in psychology are especially well compiled, but only very elementary consideration is given to the psychology of individual differences. The work of Köhler and Lashley is mentioned in detail, whilst Spearman, the third of the leading protagonists against associationism, receives no mention.

Detailed references are provided, but they are for the main part for American works only. British psychologists are represented only by Wm. McDougall, Wm. Brown, B. Hart and Prof. Burt. WM. STEPHENSON.

The House that Freud Built. By JOSEPH JASTROW, Ph.D., LL.D. New York: Greenberg, 1932. Pp. 293. $2.50.

It is roughly true that during the lifetime of a whole generation the many readers of Prof. Sigmund Freud's books have been divided into Freudians and anti-Freudians, into enthusiastic followers and violent or derisive opponents. Perhaps not even the Copernican theory evoked so much bitter controversy and so much emotional bias on both sides. The controversy is now entering a more sober and critical phase, and this book is a sign of these new times. Prof. Jastrow is not quite the first to write both appreciatively and critically about the Freudian psychology. Jung, Rivers, Bleuler, Bumke (the successor to Kraepelin), Prinzhorn and the writer of this notice have preceded him in

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expressing both high appreciation and severe criticism. But this book is significant in two ways. First, it is written for the layman rather than the expert; secondly, it is written primarily for the American public. And, as the author well knows, there is in America a very large public which, vaguely and crudely interested in the Freudian psychology, stands sadly in need of some critical guidance towards a true estimate of Freud's achievement—a guidance which they have not received hitherto, because their multitude of professors of psychology have continued, with very few exceptions, to be uncritically contemptuous or uncritically credulous in face of the Freudian invasion.

Jastrow's criticisms are made from the standpoint of logic and scientific method, and are not based on any first-hand familiarity with the neuroses; but they are well chosen and vigorously pushed home. A few extracts will illustrate his position and the tenour of his verdict. "A reformed psycho-diagnosis of the future will in my opinion repudiate largely the findings of Freud, yet regard Freud as the founder of an invaluable technique." Of "the Freudian structure" in general, he writes: "I have found it wanting in naturalistic substance, and through that basic defect, aided and abetted by a disregard of the fundamental logic by which naturalistic science has come to be established, it has grown into a castle of delusions. Yet the paradox of the *dénouement*—not quite unique, though possibly so on this scale of importance—is that within the maze of tortuous wandering lies a worthy prize, well worth an enduring quest." And: "For both its promises and its enlightenments the *motif* of psycho-analysis will endure, and the work inaugurated by Freud marks a turning-point in the history of psychology and in the increasing knowledge of the springs of human behavior and their control." "Considering both theory and practice, the historian of psychology in the future may well regard the great mass of present-day psycho-analytic literature as one of the strangest anomalies and fantastic vagaries of the early twentieth century. And yet if he is tolerant, he may equally find in the same movement one of the truly notable movements in the understanding of the perpetual enigma—the human psyche."

WM. MCDOUGALL.

A Text-Book of Psychiatry. By D. K. HENDERSON and R. D. GILLESPIE. Third edition. London: Humphrey Milford, Oxford University Press, 1932. Demy 8vo. Pp. 595. Price 25s.

The principal feature of the third edition of Henderson and Gillespie, which appears at a comparatively short interval after the second, is the inclusion of a new chapter, extending to nearly fifty pages, on the psychiatry of childhood—an addition indicative of the rapidly increasing importance of the subject. This section is admirably done, and the case-material of a large out-patient clinic is extensively drawn upon for illustrations of the numerous types of disorder of personality, behaviour and habit. As regards ætiology, the authors, while recognizing the constitutional factors involved, lay especial stress on environmental difficulties, and this leads them to an optimistic therapeutic outlook. They make only a depreciatory reference to child analysis, and adopt what is perhaps a needlessly polemical attitude towards the views of Freud, since their own psycho-pathology is Freudian in its main

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outlines. The same tendency to withhold recognition from Freud is noticeable elsewhere; for instance, the section on the psycho-pathology of the manic-depressive psychosis is stated to be derived from MacCurdy, but the interpretations suggested are really a modified version of those of Freud. It is surprising that the doctrines of Adler are barely alluded to in the book, in spite of their continued, and indeed increasing, popularity in this country.

The legal section has been extended and re-arranged and besides a full account of the new procedures under the Mental Treatment Act, contains summaries of the corresponding laws in America and some of the continental countries.

Considerable additions have been made to the chapter on epilepsy. The biochemistry of the syndrome is discussed, including the views of Temple Fay on the importance of water-balance. Epileptic variants, cataplexy and "vasovagal attacks" are more fully described, and recent advances in treatment are reviewed, including the ketogenic diet, the use of magnesium sulphate injections, and the dehydration method.

In the section on General Paralysis, malarial treatment has been given the prominence due to it; tryparsamide and sulphosin are mentioned. The treatment of cerebro-spinal syphilis is more adequately dealt with.

Pyrexial treatment of conditions other than general paralysis receives no recognition as yet, and another notable omission is the prolonged narcosis treatment, by somnifen and similar drugs, which has now been in use for a number of years with encouraging results.

The section on occupational therapy, excellent as it is, might now be extended with advantage to include an account of the degree of organization this form of treatment has reached in America, and also of the somewhat different but no less effective system associated with the name of Simon, of Gütersloh, and described elsewhere in this issue.

There are several minor additions, incorporating recent work in a variety of fields. The papers quoted seem to be, for the most part, of American origin, and it seems a pity that so little use has been made of work done during the last few years in this country and on the Continent.

The book continues to maintain its position as the best all-round text-book for students and post-graduates alike. A. WALK.

The Principles and Practice of Psychiatry. By ALEXANDER CANNON, M.D., and E. D. T. HAYES, M.D. London: William Heinemann, 1932. Crown 4to. Pp. 437. Illustrated. Price 25s.

In the preface to this much-advertised book it is stated that "the reader is supplied with all the material necessary for the higher examinations in Psychiatry, including the M.D.; and for specialists for reference, physicians, lawyers, teachers, psychologists, and medical superintendents of mental hospitals and institutions"; and in a foreword the book is commended as being "eminently practicable" (*sic*). A large amount of material is indeed there, but for the most part in mangled and distorted form; over and over again the impression is given of a lack of any real grasp of the subject. Glaring misstatements, illiteracies and puerile didacticisms are to be found on

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almost every page, while the style is regrettably bombastic. A few quotations may serve to justify these strictures.

First, some examples of obvious misstatement :

" The psycho-analytic school of Freud says that you cannot analyse children."

" Narcissism = self-adornment as a sexual expression."

" Catatonia (katatonia)—patient obeys the auditory hallucinations (imaginary voices).

" Catalepsy—patient obeys your commands."

" Crimes done in moments of dissociation do not appear (so far as records go) to come before the court, but they are possibilities in the future."

Misstatement combined with confusion of thought :

On p. 174 we find, correctly enough :

" *Conversion hysteria.*—The result of the compromise . . . is a physical symptom.

" *Anxiety hysteria.*—Here the symptoms are mainly mental, and manifest as morbid fears."

But on p. 179 the contrary is stated—

" Repressed ideas manifest themselves . . . either as bodily symptoms as in the anxiety hysteria of Freud, or as mental symptoms in the conversion hysteria of Freud."

And on p. 293 this is confirmed—

" Therefore the hysterical symptoms = manifestations of certain complexes dissociated or ' split-off ' from consciousness and form a type of *conversion hysteria.* The mental trouble is replaced by physical disability in another form—*anxiety hysteria.*"

And again, on p. 296 the morbid fears are listed under " Compulsion Neurosis " !

Instances of sheer incoherence :

" In estimating emotions it is useless to invent stereological tests."

" The oldest and the youngest children shown to be in equal proportions is false. Quite a number of children in large families arrive a long time after—as twenty-three, twenty-one, nineteen, seventeen, fifteen years. Now in this family the child of fifteen developed an inferiority complex very quickly. The history was that from babyhood until nine years of age it lived without ever meeting another child. It was also ascertained that at the end of a year it could tell you its name and address and could walk and talk, but had no teeth, and knew nothing of toys and books. It later went to school, and became unpopular and did not fit in at all."

" A replacement is (? *in*) the affective life of one idea by another which is more likely to be accepted by moral standards. The affect is stored up and displaced

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on to moral delinquency. Some real source of affect is unconsciousness, and is hence kept out of the way."

In the following the authors seem to show "ignorance of matters of common knowledge":

"Spoonerisms—*e.g.*, 'agranoid' instead of aggravating and annoying. Malapropisms are also examples of condensation: 'cuptivated' instead of cultivated and captivated."

And the following error could hardly arise except through mishearing. The italics are the reviewer's:

"*Case.*—Man working for an examination shot himself through the head and got well. (*Clifford Beard refers to the incident as 'the mind that found itself.'*)"

The following needs no comment. The italics are the authors':

"The principles which govern the trains of thought are known as the Laws of Association, as in rhythm.

"'Genius that power that dazzles mortal *eyes*,
Is oft but perseverance in *disguise* . . .'

[Ten more lines follow.]

"(From Cannon's farewell address to the University and Government of Hong Kong.)

"The words in italics show the rhythm associations."

Now a longer extract, comprising the whole of what, in the authors' opinion, the candidate for higher examinations is expected to know of an important psychoneurosis:—

"*Compulsion neurosis.*—A mental disturbance with lack of control over certain lines of thought.

"*Phobias.*—(1) Agoraphobia: fear of an open space. (2) Claustrophobia: fear of a close space. (3) Acrophobia: fear of heights. (4) Hæmatophobia: fear of blood. (5) Photophobia: fear of light. (6) Dymophobia: fear of fire and explosion, etc., etc. These symptoms may occur alone or be associated with neurasthenia, or other neurotic states.

"*Treatment.*—Physical and psychical, as for neurasthenia and hysteria. Probably psycho-analysis is detrimental to these cases. Some do well; but many do not. Some believe that this condition is allied to mental deficiency and insanity, and not to psycho-neurosis. Hypnotism sometimes useful."

Compare the extreme poverty, as well as the inaccuracy, of this description with the confident swagger of the "Psychotherapy" section:

"No mention has been made in our work of psychotherapy. We are not going to discuss the various schools and their works. But there is one thing I am quite certain of, and that is that in the successful treatment of any mental or surgical disease, disorder, or condition there are *unseen powers* at work. That *every word has magic power* cannot be denied. What is this magic unseen power? It is our own *Personal Magnetism*; what that is I dare not attempt to describe, and of its workings there is an abundance of evidence."

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There follows a defence of Mesmer and two pages of hints on hypnotism and suggestion, concluding with a fervid exhortation :

" Select your words. What you say will often make or mar the patient. Remember that the patient sees everything *through different eyes* to that of the specialist. Therefore again I say, SELECT YOUR WORDS, RETAIN YOUR DIGNITY, REVEAL YOUR GREAT HEART, SHOW YOUR AFFECTION, IMPRESS UPON YOUR PATIENT YOUR SINCERITY OF PURPOSE, remembering that every word you utter has untold power : EVERY WORD HAS MAGIC POWER."

Suitable bathos is achieved after this by a section on " Occupational Therapy," in which the subject is dismissed in exactly six of the baldest possible lines.

In the last thirty pages legal forms, neurological diagrams, the deaf and dumb alphabet, posological tables and a particularly naïve " list of psycho-analytic symbols " jostle each other in an endeavour to make the book all-inclusive. Here are also to be found the various foreign classifications of mental disorders collected for the use of the Clinical Psychiatry Sub-Committee of the Association, and reprinted (without permission or acknowledgment) from the pages of this Journal.

It is difficult to find anything to say in the book's favour. We can only hope that overseas and foreign reviewers will not take its intellectual level as in any way indicative of that of British psychiatry. It is a pity that one of the most eminent members of our specialty should have been misled into allowing his name to be associated with such a worthless production.

A. WALK.

Essentials of Psychiatry. By GEORGE W. HENRY, M.D. With a chapter on Psychiatric Nursing by ADELE POSTON, R.N. Baltimore : The Williams & Wilkins Co., 1931. Medium 8vo. Pp. xiv + 304. Price 21s.

The second edition of Henry's *Essentials of Psychiatry* is in many ways better than the first edition, but there is still room for improvement.

The subject of occupational therapy, which, after all, is well developed in the United States, might have had a chapter to itself, it is such a very important part of the attack on the vicious circle which we have come to know as a mental disorder. One has only to see the effect on an epileptic ward to realize the importance of work—and constructive work at that. The work must be such that the individual regains his self-respect.

The space devoted to hydrotherapy is much too limited. The Plombières douche and the whole subject of colonic lavage is deserving of considerable attention. The statement that " sedatives are occasionally given in emergencies and to extremely restless and agitated when all other forms of therapy fail " is not consistent with the general trend of ideas on treatment in this country. In many borderline cases in which an individual is trying hard to struggle against the trials and stresses of modern life, a small dose of sedative daily is often a sheet-anchor which succeeds in keeping the patient from a breakdown.

The most unsatisfactory chapter in the book is one entitled " The Psychopathology of the Normal". To include "psychopaths" amongst the "normal",

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wide though that term may be, is surely not a sound procedure. No one with a knowledge of the work of the individuals cited in the chapter would for a moment include them amongst the normal. Strindberg is probably the last person in the world to be described as normal ! Apart from these shortcomings the book fulfils a definite purpose in providing a well-balanced epitome of what is after all, an extremely big subject. G. W. T. H. FLEMING.

A Text-Book of Neuro-Anatomy. By ALBERT KUNTZ, Ph.D., M.D. Philadelphia : Lea & Febiger, 1931. Medium 8vo. Pp. xii + 359. Illustrations 197. Price $5.50.

With such fine text-books as " Tilney & Riley ", " Ransom " and " Quain " available, it really is rather difficult to see why yet another should be added to the list. Notwithstanding this, Albert Kuntz has written an extremely sensible text-book of neuro-anatomy. It is not too big ; in fact it might well have been a little bigger. The student who wishes a succinct account of what is after all an unpopular subject will be pleased with the material as presented. The illustrations are a particularly good feature of the book ; many of them are quite new. The development and morphology of the cerebral hemispheres is particularly well done in the space allotted to it. We think that the importance of this aspect of neuro-anatomy is usually very much under-estimated, and we are glad to see a comparatively full account of it, even at the risk of upsetting the balance of the book looked at as a whole. The student's work is made much easier if he has a sound foundation of comparative anatomy and morphology to build on. The book is extremely well printed, and is a worthy companion to our other volumes dealing with the anatomy of the nervous system. G. W. T. H. FLEMING.

Baillière's Synthetic Anatomy. Part X : The Brain. London : Baillière, Tindall & Cox, 1932. 9 × 7½ in. Plates 12. Price 3*s*.

The anatomy of the brain is quite difficult enough for the average student without adding confusion, which, we fear, these drawings will do. There are no short cuts to the structure of the brain, and there is also no doubt that the dissection must be carried out methodically in three dimensions if the brain is to be understood. We cannot see any benefit in trying to do two dimensions at once ; it certainly will not ease the task of the beginner, and even one well versed in neuro-anatomy who wishes to refresh his knowledge will find it " heavy going ". G. W. T. H. FLEMING.

Mental Deficiency Due to Birth Injuries. By E. A. DOLL, Ph.D., W. M. PHELPS, M.D., and RUTH T. MELCHER, M.A. New York : Macmillan, 1932. Pp. 275. Price 24*s*.

That birth injury may act as a cause of mental deficiency has long been known : and following the present tendency to unload the sins of the

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psychiatrist from the scapegoat of heredity, a book devoted to the birth-injured group of aments is most welcome.

In writing such a book the prime difficulty is to ensure accuracy of classification, for the differential diagnosis of the condition is by no means easy. This aspect of the problem is well discussed in the work under review, and the literature is carefully and dispassionately examined; though scarcely sufficient weight is attached to the formidable evidence against birth injury as a cause of deficiency, presented some years ago by Ford, Crothers and Bronson. Neurological opinions on the subject are widely divergent, and upon the question of ætiology and physical diagnosis the authors offer no fresh evidence. Their 12 cases are presented in two groups; the first of 7 cases due to birth injury uncomplicated by other factors; the second of 5 cases, in whose family some neuropathic taint was known to exist though the related individuals were never mentally deficient, and were not in the immediate families of the patients. None of the 12 had any physically or mentally abnormal siblings. The cases are fully described, and, except possibly for the inclusion in the first group of a boy with "macrocephaly" (though he was certainly birth-injured), the diagnoses appear to be beyond question correct. All but one of the patients showed some motor disability, the remaining case showing a behaviour disorder suggesting a psychotic type.

The largest and most important section of the book is that devoted to the psychological aspect. The data consist largely of analyses of test results, presented in tabular form, and so scarcely susceptible of descriptive review. The difficulties in the way of accurate psychometric examination of the physically handicapped defective are matters of common experience, and, as the account shows, the Herculean task of obtaining adequate and accurate data from the available material called for all the usual Vineland thoroughness and skill. The effort has been generously rewarded, for several facts emerge of great interest and of the very first importance; constituting, indeed, definite evidence that it may be possible to demonstrate a psychological syndrome isolating the birth-injured from the general mass of the mentally deficient.

The first of these findings is a difference in the order of difficulty of the tests in the Stanford-Binet scale for the birth-injured defective, as compared, not only with the normal, but with the defective without birth injury. Accurate evaluation of these differences is difficult, especially in view of the small number of cases, but the tendency for the group to do well on tests which place a premium on judgment is suggestive; and it certainly seems "immediately desirable to develop similar data for other types of brain pathology". An analysis is given showing the relative influence of the "birth injury" factor *versus* the "feeble-minded" factor in these subjects.

It is curious that out of the various components of the test battery used, the Porteus Maze should provide some of the most useful information from subjects with dyskinesia, though most of the subjects obtained first scores definitely below those on the Binet. Far more remarkable, however, is the extraordinary improvement in scores on later administration of the Maze, an improvement which is very much greater than that seen in ordinary defectives or normal subjects. The phenomenon is possibly related to a difference in the age and rate at which intellectual development progresses. This difference in age and rate of development is most striking, and serves still further to differentiate the birth-injured from the ordinary mental defective.

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It would seem that retardation, as apart from lack of potentiality, is a feature of the group, for all the accurately measurable cases of sufficient age showed a definite improvement after their fourteenth year, and (again in those of sufficient age) even after the twentieth year—at a time, that is to say, when the usual defective of comparable grade is quiescent, if not actually deteriorating.

That section of the work devoted to physical therapy demonstrates once more the incalculable value of the method for defectives with motor disability. The technique is difficult to attain, and calls for almost dæmonic patience, whilst the results are not sufficiently dramatic to appeal clearly to the untrained observer ; though all serious workers in the field have long known that physical therapy was of great value in such cases. How great that value can be is amply demonstrated by the results obtained in this group, for in no branch of medicine are the physical and the psychological more inextricably intertwined.

The theoretical implications which may be evolved from the study receive a bare mention. In view of the enormous importance of the problems raised, the work can be said scarcely to have started ; and one feels that the authors are wise in drawing no firm conclusion, and indulging in no optimistic speculations.

The entire work is admirably concise, and accurately expressed—though the description of a case as " macrocephalic probably as the result of early hydrocephalus " is, at any rate from the English point of view, a confusion in terms. The analysis of the data is carefully tabulated, and the individual histories are reported in great detail.

The entire study maintains the high scientific standard of the Vineland tradition, and Dr. Doll and his associates are to be congratulated on a most important book. C. J. C. EARL.

Paralysie Générale: Les Traitements Modernes. By A. SÉZARY and A. BARBÉ. Paris : G. Doin et Cie, 1932. Pp. 34. Price 8 fcs.

For more than three years the authors have been treating general paralysis by the subcutaneous injection of sodium stovarsol. The procedure adopted is as follows : 1 grm. of the product is injected three times a week—a course consisting of at least twenty-one injections. In cases where improvement does not take place until towards the end of the course, as many as 30 grm. of stovarsol or even more may be injected. As a rule, however, not more than 21 grm. are given. The treatment is then interrupted for a month, when a second course is begun on the same lines as the first. When the effect produced is favourable, it is confirmed and consolidated by several courses given at intervals of two or three months. The authors' statistics go to show that stovarsol is a simple method of treatment, free from danger, and bringing about definite improvement in the patient's symptoms in the proportion of 68%, 58% or 26%, according to whether the mental state is one of excitement, intellectual enfeeblement or profound dementia.

An interesting comparison is drawn between the effects of stovarsol and malaria in the treatment of general paralysis. The quality of the results obtained by the two methods is practically identical. It is claimed, however, that stovarsol is quicker in its action than malaria. Moreover, stovarsol has a more extensive application, since it can safely be employed in those cases

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which are too weak to withstand a series of rigors. The dangers of malaria therapy are said to be much greater than those attending the use of stovarsol. Both methods are equally capable of reducing or improving the anomalies in the cerebro-spinal fluid and in the blood. Attention is drawn to the curious discrepancies which may occur in the clinical and biological modifications obtained by both methods of treatment. Thus the cerebro-spinal fluid of a patient apparently cured may remain abnormal; while it may be restored to normal in a case which shows little or no mental improvement; furthermore, the Wassermann reaction of the blood frequently remains positive in cases which show the greatest improvement.

In the opinion of the authors, if it were decided to use the associated method of treatment, it would be best to begin with stovarsol on account of it being safer and quicker in its action. If after two courses of stovarsol the results were not adequate, then malarial therapy might be instituted. Drs. Sézary and Barbé are at the present time engaged in researches on this combined method.

NORMAN R. PHILLIPS.

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Part III.—Epitome of Current Literature.

1. Anatomy and Physiology.

Effect of Hyperventilation on the Excitability of the Motor Cortex in Cats. (*Arch. of Neur. and Psychiat., vol. xxviii, September,* 1932.) *Brody, B. S., and de Barenne, J. G. D.*

The authors carried out experiments on the excitability of the motor cortex in cats. They found that hyperventilation alone results in 62% of cases in a slight increase of the cortical responses ; in 38% the excitability did not change. After the injection of a small non-convulsant dose of strychnine the effect of hyperventilation is much more marked. There appear shortening of the latent period, epileptoid after-discharges and spread to muscle-groups in other parts of the body. The augmentation occurs even with liminal stimuli. The excitability of the cortex shows slight " wave-like " fluctuations, which are looked on as the expression of intrinsic fluctuations of cortical activity, and which disappear under hyperventilation. After cessation of the hyperventilation the excitability is almost constantly depressed for the first four or five minutes, after which it returns to normal values. G. W. T. H. FLEMING.

Results of Stimulation of the Tegmentum with the Horsley-Clarke Stereotaxic Apparatus. (*Arch. of Neur. and Psychiat., vol. xxviii, September,* 1932.) *Ingram, W. R., Ranson, S. W., Hannett, F. I., Zeiss, F. R., and Terwilliger E. H.*

Faradic stimulation of the mesencephalic tegmentum in cats with intact brains evoked a response similar to that obtained by stimulation of the cut surface of the brain in decerebrate animals.

The response consisted of a curving of the neck and trunk towards the side stimulated, flexion of the ipsilateral fore-limb and extension of the contralateral fore-limb with varying movements of the hind-limbs. This response pattern may be obtained from (1) the caudal part of the subthalamus in the region of the anterior capsule of the red nucleus, (2) from the reticular formation of the tegmentum, dorsal and lateral to the red nucleus, including the central tegmental fasciculus, and (3) caudal to the red nucleus from almost anywhere in the reticular formation as far back as the caudal part of the pons, where its foci seem to shift laterally until at the level of the trapezoid body they appear to lie ventrally and laterally in the neighbourhood of the rubrospinal tract.

A large area of the brain-stem was explored rostrally through the hypothalamus, subthalamus and extreme ventral part of the thalamus as far as the preoptic area. This area was, for the most part, silent, with the exception of the

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field of Forel. Occasionally eye movements and sympathetic responses were obtained with sometimes a turning of the head away from the side stimulated. The response was never obtained from the substantia nigra.

G. W. T. H. FLEMING.

Effects of Lesions in the Red Nuclei in Cats. (*Arch. of Neur. and Psychiat., vol. xxviii, September,* 1932.) *Ingram, W. R., and Ranson, S. W.*

The authors experimented on cats, using the Horsley-Clarke stereotaxic instrument for destroying the red nucleus. In eight cats the red nuclei were practically completely destroyed. Within a few hours the animals were capable of righting themselves and exhibiting a type of locomotion characterized by poor co-ordination, overstepping, slight ataxia, and shuffling movements of the hind-limbs. A mild degree of extensor rigidity can be demonstrated. In another series in which the red nuclei were largely destroyed, a similar group of symptoms was observed after two weeks. The animals were able to right themselves, stand and walk. A slightly incoordinate gait was characteristic, with overstepping, skating, circumductory movements of the hind limbs, noticeable stiffness, and a tendency to abnormal position of the feet. There was obviously increased tonus of the extensors. The authors point out that the red nucleus is only a part of a rather widely distributed system, the complexities of which cannot be completely elucidated by the elimination of one of its factors. At the same time it is pointed out that no movements result from faradic stimulation of the red nucleus in animals with intact brains, while tonic movements and fixation of the limbs in a posture like that assumed at a certain phase of stepping can be called forth by similar stimulation of the more diffuse reticular areas of the tegmentum outside this structure.

G. W. T. H. FLEMING.

On the Pharmacology of the Grasp Reflex. (*Brain, vol. lv, September,* 1932.) *Richter, C. P., and Paterson, A. S.*

It having been shown that a reflex grasping response can be induced in adult monkeys by hypodermic injections of bulbocapnine, and by the inhalation of carbon dioxide gas in high concentrations, the authors investigated a number of drugs.

This reflex has been shown to be due to lesions of the frontal lobes or underlying structures.

They found that the reflex can be elicited in adult monkeys by the following substances: Bulbocapnine, carbon dioxide, ether, chloroform, chloral hydrate, paraldehyde, alcohol, amytal, luminal, hyoscine, cocaine, morphine, apomorphine, camphor, insulin, eserine and strychnine. All these are cerebral depressants, producing a dazed or stuporous condition.

The following, which are all cerebral stimulants or act peripherally without affecting the central nervous system, failed to elicit the reflex: Adrenaline, pituitrin, atropine, pilocarpine, caffeine, nitroglycerine and histamine.

The substances which produce the reflex paralyse the mechanisms in the frontal lobe, block the pathways from the frontal lobes to the motor centres in the cortex, particularly the occipito-frontal bundle of Schuster and Caspar, or block the pathways from the lobes to the lower centres. That the drugs must attack the nervous system also at a fairly low level is suggested by the

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fact that the reflex is brought out by hypnotics which are thought to act chiefly on the sleep mechanism in regions round the third ventricle.

G. W. T. H. FLEMING.

The Influence of Bulbocapnine on Basal Metabolism [*Influenza della bulbocapnina sul metabolismo basale*]. (*Boll. della Soc. Ital. di Biol. Sper., vol. vi, September*, 1931.) *Curti, G.*

After intravenous injection of bulbocapnine (·1 gm.), the author found a distinct tendency to a decrease in basal metabolism.

G. W. T. H. FLEMING.

The Brain Problem, in Relation to Weight and Form. (*Amer. Journ. Psychiat., vol. xii, September*, 1932.) *Donaldson, H. H.*

The number of cerebral neurons is fixed within biological limits, and is characteristic for the species. Brains of greater weight are composed of larger neurons, and this enlargement is proportional in the different parts of the brain. No method of assorting brains on the basis of weight or proportions of parts serves to classify them according to intellectual capacity. The vascular tree, however, as represented by the vessels in the pia, is better developed in the intellectuals ; this means a better blood-supply to the cortex. Changes in the composition of the blood serve to modify the activities of the neurons, and it is a fair inference that blood composition may be a significant factor in determining the grade of mental processes. M. HAMBLIN SMITH.

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2. Psychology and Psycho-Pathology.

Electrophysiology of Mental Activities. (*Amer. Journ. of Psychol., vol. xliv, October*, 1932.) *Jacobsen, E.*

The author carried out experiments to show changes in potential in the nervous and muscular systems during mental activity. The subjects used had mostly been trained to relax. He found that when the subject, lying with eyelids closed, engages in mental activity, such as imagination or recollection, contraction occurs in specific muscles.

Evidence is thus provided that the physiology of mental activity is not confined to closed circuits within the brain, but that muscular regions participate. During visual imagination or recollection the muscles that move the eyes contract, as if the subject were looking at an imagined object. During inner speech muscles in the tongue and lips contract as if to say the words in swift and abbreviated manner.

During imagination or recollection of muscular acts or of matters that involve such an act on the part of the subject, contraction occurs in some of the muscle-fibres which would engage in the actual performance of the act. During a particular mental activity the muscles of a quietly lying subject, trained to relax, remain as a rule inactive, excepting those specifically engaged.

Electrical records along with subjective reports indicate that during general

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progressive muscular relaxation, imagery and thinking processes dwindle and disappear.

The action potentials measured in these observations were proved to be very different from the galvanic reflex. G. W. T. H. FLEMING.

Muscular Tension and Irritability. (*Amer. Journ. of Psychol., vol. xliv, October,* 1932.) *Freeman, G. L., and Katzoff, E. T.*

The authors carried out experiments on 30 college students, using the Cason Common Annoyance Test as an indicator of emotional irritability in everyday situations. The muscular tension was measured by means of a bulb held in the hand and connected with a kymograph. The authors found that subjects who are tense and highly excitable in experimental situations also tend to rate themselves high with regard to common annoyances. Annoyance appears to depend on several factors, often described as "excitability", "emotional immaturity", "instability", "poor adjustments", and "irritability". The authors define irritability as the tendency to be easily aroused and stirred up to respond in a somewhat irrational manner, and to react emotionally as well as perceptually to external occurrences. Those individuals who are more easily annoyed and irritated than others may possibly have a neuro-muscular mechanism which is habitually geared to high pitch.

G. W. T. H. FLEMING.

The Relation between Muscular Tension and Quality of Performance. (*Amer. Journ. of Psychol., July,* 1932.) *Duffy, E.*

In the author's experimental results high degrees of muscular tension were usually found associated with a performance of poor quality. A moderate degree of tension offers the greatest advantages, since very high tension tends to be disruptive, and very low tension probably involves lack of alertness or effort. Problems which urgently require solution are:

(1) To what extent does the relation between muscular tension and quality of performance vary with (*a*) different tasks, (*b*) different individuals, (*c*) adults and children?

(2) Are voluntary and involuntary tensions comparable in their effects?

(3) What is the relation between various degrees of excitation, or of muscular tension and the ability to inhibit and co-ordinate reactions?

G. W. T. H. FLEMING.

An Experimental Inquiry into the Existence and Nature of Insight. (*Amer. Journ. of Psychol., July,* 1932.) *Bulbrook, M.*

The author points out the variety of meaning attached to the word "insight" and the resulting ambiguity in its use. He then describes thirteen tests which were carried out with various expert observers and subjects, and concludes from these tests that the word "insight" does not distinguish any characteristic process, operation, form of conditioning or mode of discovery.

G. W. T. H. FLEMING.

On Tactile Imagination and Tactile After-Effects. (*Journ. of Nerv. and Ment. Dis., vol. lxxvi, July and August,* 1932.) *Bromberg, W., and Schilder, P.*

The authors carried out experiments on eight normal subjects, all physicians. They found that tactual images have an objective and subjective part; the

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latter is partly a memory image and partly a sensation on the skin. There are tactual images without subjective components, and persons with strong objective images have very unsatisfactory subjective images and sensation. The authors' experiments were mostly confined to the subjective side of imagination. In all subjects the tactual sensations and images followed the optic pictures, in spite of the fact that tactual imagination soon progresses along its own line of development and becomes widely independent of the optic imagination, which can also elaborate independently of the tactual imagination. The optic picture of the touched area of skin is often vague and indistinct, having a rather symbolic character. Imagined sensations are partly on the skin and sometimes under it. They are frequently mixed with sensations of temperature—warmth or cold. The tactual imagination which is in the foreground creates in association with it a tactual background. The dissociation between the optic and tactual imagination becomes more evident when the subject is turned in the revolving chair. The tactual subjective imagination has an enormous tendency to spread to remote parts of the body. Tactual imagination often has a rhythmic character, and has a quality of movement which is inherent in the imagination as embodied in its tingling character; in addition there are movements of the image as a whole. Vestibular irritation increases the tendency of movement in the image, and there is a consistent relationship between the duration of turning and the movement of the image.

Several simultaneous imaginations of touches form a unit (Gestalt). Imagination of successive points provokes curved connecting lines between the points, sometimes through the air. More distant points are connected by slow movement along the skin. In the imagination of lines and geometric figures the result is incomplete because parts of the lines disappear. There is a marked tendency towards curving of lines, and a marked difficulty in imagining angles and crossing points of lines.

Slight touches have a distinct after-effect of rhythmic character lasting up to three minutes.

The tactual after-effect is independent of the optic images. The tactual after-effect may provoke optic images. In the after-effect the foreground of the sensational field stands out more sharply from the background than in tactual imagination. The effects of vestibular irritation show an increased rhythmic tendency, elongations, curvings, and a general non-specific increase in the tendency to movement.

The general tendencies of spread, of the formation of a background, of the effacement of certain parts of the images, of the building up and destruction of forms (Gestalten), of movements, of curving of lines, and the tendency against perception of angles, are identical in the after-effects with the tendencies noted in imagination.

After-effects can be destroyed by rubbing the skin where the sensation was felt. There is a tendency for an impression to move towards points which are especially outstanding in the postural model of the body, *i.e.*, joints, knuckles, and the borders of the hands.

The authors find that the phenomenon of tactile imagination and the phenomena obtained in spinal cord lesions, especially of the posterior column, are to a great degree identical. Disintegration phenomena after spinal cord and more central lesions are identical with the phenomena in after-effects and in the imaginations of normal subjects.

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There was a close relationship between the optic experiments of the authors and the results of mescaline intoxication described by Beringer.

G. W. T. H. FLEMING.

Relation of the Male Avian Gonad to Responses Pertinent to Reproductive Phenomena. (*Psychological Bulletin, vol. xxix, July,* 1932.) *Carpenter, C. R.*

Some hormone produced by the testis is fundamental to normal motivation of sex activity. Most investigators agree that castrates show a minimum of primary sexual behaviour, and do not engage in any sexual activity save under supernormal stimulation. But insufficient attention has been given to the question whether a fowl who has never had the effect of the gonads will engage in primary sexual activity. The possibility of some portion of the gonadal tissue being left after the operation has to be considered ; an improvement in the technique of experimental operations is required.

M. HAMBLIN SMITH.

Effects of Castration on the Behaviour of Mammals. (*Psychological Bulletin, vol. xxix, July,* 1932.) *Commins, W. D., and Stone, C. P.*

Most observers have reported a lowering of the rate of basal metabolism after gonadectomy, but other factors play a greater part in this than does the castration itself. Changes occur in the electrical excitability of the peripheral nervous system. Greater fatigability supervenes upon castration. In most male cases loss of sexual desire or impotency gradually follows, but this rule is not universal, and this latter fact has to be considered in weighing proposals for the castration of anti-social persons. Knowledge of the pre-operation libido is essential for the correct interpretation of post-operative effects in females. Observations on sex reversal after castration have largely been vitiated by lack of control statistics. The whole question is dependent upon the basis of unidentified factors which underlie the affective life.

M. HAMBLIN SMITH.

Retention after Intervals of Sleep and of Waking. (*Arch. of Psychol., No.* 137, 1932.) *Van Ormer, E. B.*

From his experimental work, the author finds that, assuming that there is no decrease in learning efficiency during the late evening hours, the advantage of night study is evident. The retention of verbal material after from 4–8 hours' sleep is greater than after the same time of waking. The author thinks it quite possible that forgetting is a function of the nature of the interpolated experience, the altered environmental context and the organic state of the individual during and subsequent to learning, rather than intrinsically a function of the period of disuse.

G. W. T. H. FLEMING.

The Learning and Retention of Pleasant and Unpleasant Activities. (*Arch. of Psychol., No.* 134, 1932.) *Cason, H.*

The author, after summarizing the views of various writers, describes a considerable amount of experimental work of his own. He puts forward the following conclusions and propositions which appear to him to be justified by experimental and observational data.

(1) There is an optimism in judgment and an optimism of memory for

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affective activities. There is a general tendency to over-estimate the number, duration and strength of the pleasant activities and to under-estimate the number, etc., of the unpleasant activities.

(2) Pleasant activities are positively correlated with optimistic temperaments, and unpleasant activities are positively correlated with pessimistic temperaments.

(3) Unpleasant activities and experiences are stronger and have a more positive character than pleasant activities and experiences. Probably pleasant and unpleasant activities and experiences are not located on exactly the same psychological plane.

(4) There is further learning and a later relative improvement in the retention and reproduction of pleasant activities. This conclusion does not hold for every affective activity or experience, and is more applicable to life-like situations and activities than to laboratory experiments.

(5) There is little difference in the efficiency with which pleasant and unpleasant activities can be learned.

(6) Under the ordinary conditions of everyday life, the unpleasant activities are more numerous and of longer average duration than the pleasant activities.

(7) The efficiency of learning is greater when the affective factor is present.

(8) The feelings which are present on reproducing or recalling past activities and experiences tend to change with the passage of time.

G. W. T. H. FLEMING.

The Journal of Comparative Psychology, vol. xiv, August, 1932.

This number contains the following articles:

The Influence of Ligating One of the Common Carotid Arteries upon Handedness in the Rat. Peterson, G. M.

The dominance of one cerebral hemisphere in the rat is not due to unequal blood supplies coming from the two carotid arteries. Until positive evidence is forthcoming, the explanation of cerebral dominance in man in terms of difference in the mode of origin in the two carotids must be regarded sceptically.

The Order of Eliminating Blinds in Maze Learning by the Rat. Spence, K. W.

There is evidence of some backward order principle of learning in the maze operation. Another factor is an absolute direction orientation on the part of the animal to the goal.

The Effect of Castration at Various Ages upon the Learning Ability of Male Albino Rats. Commins, W. D.

Castration does not render the rats inferior in learning ability. The testicular hormone has no demonstrable influence upon the development of this ability.

On the Supposed Visual Function of the Nictitating Membrane in the Domestic Pigeon. Friedmann, H.

Nictitation is primarily a type of reflex protection to the eye during jerky movements.

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Concerning the Discrimination of Geometrical Figures by White Rats. Fields, P. E.

A detailed criticism of the work of N. L. Munn on this subject.

Observations on Apparently Unlearned Behaviour. Sanborn, H. C.

Notes on cases of apparent inheritance, which may be useful for later experimental verification.

Comparative Behaviour of Primates. Maslow, A. H., and Harlow, H. F.

Describes delayed reaction tests on certain kinds of primates. Consistent performance was found in each group.

The Influence of Embryonic Movements upon the Behaviour After Hatching. Zing, Y. K.

Behaviour is neither pre-natally nor post-natally acquired, nor is it hereditary. The development of behaviour is an absolutely gradual and continuous process.

Test Performance of Full- and Mixed-Blood Dakota Indians. Telford, C. W.

In general the Indians stand between the white and Negro groups studied. No relationship between the degree of Indian blood and test performance is found.

The Relative Values of Satisfying and Annoying Situations as Motives in the Learning Process. Dodson, J. D.

A description of a series of experiments which have a bearing upon the disadvantage of using the fear drive as a motive in education.

Sex Differences in Rats on Three Learning Tasks. McNemar, Q., and Stone, C. P.

The authors conclude that sex is a variable which needs to be considered in experimental studies on rats. M. HAMBLIN SMITH.

The Journal of Comparative Psychology, vol. xiv, October, 1932.

This number contains the following articles :

An Experiment in Maze Learning with Ants. Evans, S.

The results indicate that ants learn by experience, in addition to being guided by the sense of smell. Ants prefer to follow ant paths.

The Effectiveness of Food and Electric Shock in Learning and Retention by Rats When Applied at Critical Points in the Maze. Dorcus, R. M., and Gray, W. L.

Shock is more effective in the reduction of errors than is the food eaten. A relatively smaller number of shocks received is much more effective than food eaten a greater number of times.

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Water Temperature as an Incentive to Swimming Activities in the Rat. Wever, E. G.

The rat's incentive to escape by swimming is greatest at low temperatures and least at those near body temperature. High temperatures produce considerable stimulation, but this is apparently of a disorienting character, and results in a relatively inadequate performance.

Intercorrelations of Measures of Ability in the Rat. Commins, W. D., McNemar, Q., and Stone, C. P.

A light-discrimination habit does not seem to be related to any of three maze habits or to the learning of a problem box.

Comparative Behaviour of Primates; Complicated Delayed Reaction Tests. Harlow, H. F.

Certain of the Old-World monkeys are able to solve two delayed reaction problems concurrently. There is, however, a considerable variation in the different kinds of these primates.

Comparative Behaviour of Primates; Delayed Reaction Tests on Subnormal Humans. Harlow, H. F., and Israel, R. H.

Idiots and low-grade imbeciles are able to respond successfully to delays of fifteen seconds, with little or no practice; they appear to be definitely superior, in this respect, to certain monkeys. Subnormal humans do not show greater facility in learning than do Old-World monkeys. The mental capacity of the Catarrhine monkey, as measured by these tests, appears to be equal to that of an idiot with a mental age of about two years.

Antagonistic Visual Discrimination Habits in the White Rat. Krechevsky, I.

The rapidity and efficiency is improved with successive reversals, until the animal can reverse his behaviour with only a minimum of errors and trials.

Maze Learning after Lesion in the Cervical Cord. Ingebritsen, O. C.

There is no evident relation between the cross-sectional area of cord involved in the lesion and the rate of learning. The fact that limitation of kinæsthetic sensitivity did not produce any discoverable retardation argues against the primary importance of kinæsthesis in maze-learning. The results differ from those observed by Lashley. M. HAMBLIN SMITH.

Inconstancy of the Formal Structure of the Personality: Experimental Study of the Influence of Mescaline on the Rorschach Test. (*Arch. of Neur. and Psychiat., July*, 1932.) *Wertham, F., and Bleuler, M.*

The authors compared the Rorschach test under mescaline with that obtained under normal circumstances, and found that in most cases the results were similar. In one case, however, there was a remarkable difference. Under mescaline the personality was described as that of a synthetic intellectual with a grasp of whole situations, unconcerned with details, naturally sociable and enjoying the social side of life.

The test without mescaline gave a personality described as that of an analytic, introverted natural scientist, an observer of and believer in minute

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details to the extent of missing a grasp of the whole, hesitant and self-critical. The picture obtained under mescaline was the real personality of the subject as known in life and from his personality study. The authors consider that this result must be due to secondary factors rather than to a direct action of the poisons. G. W. T. H. FLEMING.

The Mathematical Formula of Human Affectivity and Personality [*La fórmula matemática de la afectividad y de la personalidad humana*]. (*Actualidad Médica Mundial, August,* 1932.) *Lezama, L. A.*

This article is an attempt to represent personality in the form of a geometrical figure. The author concludes that the most modern conceptions of universal energy applied to all vital phenomena, the theory of hereditary degeneration, the information furnished by certain psychiatrical clinical pictures, and the data supplied by criminologists as to the psychogenesis of guilt, all lead us to represent the phenomena of affectivity as belonging to the " Universal Entropy ". All energy which transforms itself produces entropy. The human personality produces entropy in the form of affectivity. Clinical psychiatry and criminology show that affectivity is a product of convergent causalities. The phenomena of refraction and of personality are homologous ; and as the former can be represented by a kinematic equation, so also can the latter. The personal constitutional variations which are concerned in all psychopathic states can be shown by the vector radii of a circle.

M. HAMBLIN SMITH.

The Significance of Early Personal History for Certain Personality Traits (*Amer. Journ. Psychol., vol. xliv, October,* 1932.) *Wang, C. K. A.*

From a study of ascendance—submission and introversion—extroversion in 358 undergraduate students in the University of Chicago, the author comes to the following general conclusions :

The traits leading to ascendance are reading omnivorously for pleasure and taking part in games at every opportunity ; those leading to submission are favouring languages in high school, reading very little for pleasure and having limited companionship.

Significant for introversion were having few playmates as a child, indulging in few social amusements, participating rarely in games at school and having few or no friends ; for extroversion were having many playmates, participating in games at every opportunity and being admired by associates.

From the point of view of suggestibility it was ascertained that children born to parents under 25 years of age had a tendency to be highly suggestible. Participation in games at every opportunity and in many kinds of religious activities seemed to be connected with low suggestibility, whereas participation in games only when asked or urged seems to be connected with high suggestibility. G. W. T. H. FLEMING.

A Study of Behaviour Problems. (*Psychol. Clinic, vol. xxi, June–August,* 1932.) *Mendenhall, G. S.*

Five hundred children (400 boys and 100 girls) were studied. Such children may be presented for examination either for educational or disciplinary reasons, or for both. School retardation may be found in either

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group. The mentally retarded may be socially normal; intelligence quotient is only one factor in a social judgment. As measured by the tests employed, boys showed a greater range of intellectual ability than girls. The adolescent age is the period of greatest maladjustment in school.

M. HAMBLIN SMITH.

A Clinical Demonstration of Superior Children. (*Psychol. Clinic, vol. xxi, June–August,* 1932.) *Sylvester, M. L.*

Superiority is both quantitative and qualitative. The latter is determined by what we happen to value. The Binet-Simon scale has been constructed by men who have thought certain tests worth while; these tests measure intellectual ability, but the conception of mental age must not be carried too far. A six-year-old girl and a sixteen-year-old girl may each have a mental age of ten years; but it is absurd to think that, for this reason, they can be educated together. We must be careful to distinguish between genius and talent.

M. HAMBLIN SMITH.

Female Sexuality. (*Internat. Journ. of Psycho-Analysis, vol. xiii, July,* 1932.) *Freud, S.*

Freud has found that in females the great dependence on the father merely takes over the heritage of an equally important attachment to the mother, and that this earlier pre-Œdipal phase lasts to the fourth or fifth year—longer than had formerly been supposed. The motives brought to light by analysis which may account for this turning away from the mother are that she neglected to provide the little girl with a penis; that she did not feed her enough; compelled her to share her mother's love with others; never fulfilled all the expectations of the child's love; and that she first excited and then forbade her daughter's own sexual activity. As a result of the castration complex the little girl's development may follow along one of three lines: (*a*) renunciation of sexuality, (*b*) defiant over-emphasis of her own masculinity, (*c*) the ultimate normal feminine attitude in which she takes her father as love-object and thus arrives at the Œdipus complex in feminine form. S. M. COLEMAN.

Libidinal Types. (*Internat. Journ. of Psycho-Analysis, vol. xiii, July,* 1932.) *Freud, S.*

With the libidinal situation as the basis of classification three main character-types are distinguished: the erotic type in whom loving and being loved is all-important, and in whom behaviour is governed by the instinctive claims of the id; the obsessional type, characterized by the supremacy of the super-ego; the narcissistic type, whose main aim is self-preservation. It is suggested that when a person of the erotic type feels ill he will develop hysteria, the obsessional will present an obsessional neurosis, while the narcissistic individual is particularly disposed to psychosis. S. M. COLEMAN.

A Contribution to the Problem of Libidinal Development of the Genital Phase in Girls. (*Internat. Journ. of Psycho-Analysis, vol. xiii, July,* 1932.) *Müller, J.*

By direct study in children and by the analysis of adults the writer is convinced that libidinal cathexis of the vagina occurs not infrequently during

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the infantile genital phase. Further it occurs in just those subjects who, in later life, prove frigid in sexual intercourse, in whom the clitoris is especially emphasized, and who are burdened with a strong castration complex and masculine character traits. S. M. COLEMAN.

Internationale Zeitschrift für Individual-Psychologie, May–June, 1932.

This number contains the following articles:

Effective Factors in Psychotherapy [*Einige wirksame Factoren in der Psychotherapie*]. *Dreikurs, R.*

The nervous patient, being essentially without courage himself, needs primarily a strong personality in his physician, the actual method of treatment being of less significance. Various effective methods—referred to as therapeutic "tricks" (Adler)—are discussed as startling the patient out of persistently inappropriate emotional attitudes into a clearer perception of their significance for himself. Such "tricks" are: taking the patient by surprise; turning the tables on the patient, as by suddenly insisting upon, instead of combating, the latter's own view of the genuinely somatic nature of a conversion symptom; irony; antisuggestion—described by Adler and named by Wexberg—the urging to a still more complete indulgence of any given symptom, such as weeping, etc. The danger of any excessive use of such "effective" methods is pointed out, as well as the possible reactions on the part of the patient.

The Vienna Individual Psychology Experimental School [*Die individual-psychologische Versuchsschule in Wien*]. *Birnbaum, F.*

The application of individual psychology methods in a working-class school. As the experiment only dates from September, 1931, the article deals more with intelligent anticipations than actual results.

Change of Life-Style—Transformation of Talent [*Änderung des Lebensstiles—Begabungswandel*]. *Spiel, O.*

Individual psychology asks what is the meaning of laziness, stupidity, etc., as the case may be, for the whole personality? The answer is that it is a mistaken attempt to bolster up a discouraged personality—*and mistakes can be set right.* The article deals with the correcting of the mistaken life style —stupidity and buffoonery—of a normally gifted boy, by discovering and altering the emotional family setting that occasioned it.

The Individual Psychology of the Learning of Languages [*Zur Individualpsychologie des Sprachenerlernens*]. *Brachfeld, O.*

The writer holds there is a "turning-point" in the learning of a language which has to do with the psychology of courage. In all cases this turning-point connotes "*the establishing of contact with a large community*" and the consequent release of courage, whereupon learning becomes easy and rapid.

The Development of a Pair of Twins [*Aus dem Entwicklungsgang eines Zwillingspaares*]. *Bluekerchen, J.*

The writer deals on individual-psychology lines with the complementary emotional patterns of the development of twin girls from infancy to womanhood.

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Great Men [*Grosse Männer*]. *Weyr, H.*

A study of the careers of Pericles, Alexander the Great, Christina of Sweden, Count Géza Zichy and Wilhelm II as instances of over-compensation for various physical defects illustrating individual psychology theories.

The Life-Style of the Child in Story, Dream and Play [*Der Lebensstil des Kindes in Erzählung, Traum und Spiel*]. *Bader, H.*

A number of children's stories, dreams and games discussed and interpreted on individual psychology lines. JANE I. SUTTIE.

Internationale Zeitschrift für Individual-Psychologie, July–August, 1932.

This number contains the following articles :

The Methodology of Individual Psychology [*Die Systematik der Individual-psychologie*]. *Adler, A.*

A very brief and rather dogmatic statement of the infallibility of individual psychology method. The last sentence runs : " We are so well provided for in the matter of methodology that we do not need to worry about having overlooked important points."

The Universe in the Light of Modern Science [*Das wissenschaftliche Weltbild der Gegenwart*]. *Smuts, J. C.*

The address delivered by General Smuts in the autumn of 1931 as President of the British Association. The recent advances in physical, biological, physiological and psychological science reviewed and discussed in the light of the writer's theory of " holism ".

Psychology of " Understanding " and Individual Psychology [*Verstehende Psychologie und Individual-Psychologie*]. *Seelbach, H.*

A comparison of the psychological orientations of Dilthey, Jaspers and Spranger with Adler's Individual Psychology. Wilhelm Dilthey (1894) was a pioneer in rebelling against the application of the methods of natural science to the study of psychology. " We explain nature, we understand psychic life " (Dilthey). This paper is a detailed comparative study of the schools of thought mentioned and two further instalments are to appear.

Pseudo-onanism [*Pseudoonanie*]. *Freund, H.*

A brief statement of a case of apparent substitute masturbation in a child of five. The origin of the " scuffling " habits in bed—that were unaccompanied by any touching of the genitals—are considered as the reaction to a severe eczema when the child was immobilized in stiff bandages.

The Educational Opportunities Afforded by Public Residential Schools [*Erziehungsmöglichkeiten in den öffentlichen Internaten*]. *Herzog, E.*

A long and informed article on lower middle-class educational problems, with particular reference to Saxony, and dealing with the questions arising in residential school life for children of varying economic social grades and ambitions. The need is stressed for education in community living, for the

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creation of something approaching a family feeling in the school life, and for the introduction of feminine influences as part of the adaptation to the larger community of the state and outside world.

The School Essay as an Expression of Childish Personality [*Der Schüler-aufsatz als Ausdruck der kindlichen Persönlichkeit*]. *Seidler, R.*

Indications of the life-styles of children as deduced from school essays.

Individual Psychology During Lesson-time [*Individual-psychologie im Unterricht*]. *Kapuste, E.*

A slight contribution on the opportunities afforded by Bible lessons for releasing and guiding the child's approach to various personal and family problems. JANE I. SUTTIE.

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3. Psychiatry.

The Psychiatry of Ultraism. (*Amer. Journ. Psychiat., vol. xii, September,* 1932.) *Freedman, B.*

Comparison is often made between certain of the more radical manifestations of modern art and insanity. Artists have always been called neurotic. Some characteristic movements in recent literature are discussed. It must always be remembered that the insanity of one age has often proved to be the genius of its successor. M. HAMBLIN SMITH.

Mental Disorders in Siblings. (*Amer. Journ. Psychiat., vol. xii, September,* 1932.) *Humm, D. G.*

A study undertaken to gain a better understanding of the causation of persistent criminalism, manic-depressive psychosis, dementia præcox, epilepsy, and mental deficiency, and especially to determine the relative importance of hereditary and environmental factors. The material consisted of 858 siblings of patients suffering from these disorders. Access was also secured to 214 pairs of twins, one or both of each pair being affected by one of these disorders.

The closer the degree of genetic relationship to an affected subject, the greater is the tendency to mental disorder. In monozygotic twins the incidence of mental disorders was 93·5% ; in siblings the incidence was 17·8% ; in the unselected population the incidence was 0·565%. Of 74 pairs of opposite-sex twins both were affected in 18 cases, giving a ratio of 24·3%. Of the 858 subjects investigated, 414 were males and 444 females. Of these, 20·4% of the males and 15·2% of the females were afflicted with a mental disorder ; thus the incidence is somewhat greater in males (sex is, of course, to be regarded as a genetic factor). There is, however, a greater incidence of manic-depressive psychoses and of mental deficiency in female siblings. Incidence of mental disorders is higher in siblings of the same sex as affected subjects than in siblings of the opposite sex. In several families there was co-existence of manic-depressive psychosis and dementia præcox ; also an even larger number of families showing co-existence of epilepsy and mental deficiency. There is

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much to confirm the belief that some sort of relation exists between various constitutional mental disorders. M. HAMBLIN SMITH.

The Relation of the Types of Physique to the Types of Mental Diseases. (*Journ. Abnormal and Social Psychol., vol. xxvii, July–September,* 1932.) *Campbell, K. J.*

The author examined a group of 1,203 cases whose weight in pounds per inch of height was recorded. She found no difference in four out of six comparisons. The curve for weight in pounds showed that the male manic was on the average 10 lb. heavier than the male dementia præcox. The curve in pounds per inch of height showed that the mode weighed 10 lb. per inch more for the male manic than for the male præcox. Kretschmer gives ·30 lb. per inch difference. The author thinks that the fact that her group consisted of mixed nationalities, whereas Kretschmer's was purely Teutonic, may explain the difference. G. W. T. H. FLEMING.

The Rôle *Played by Masturbation in the Causation of Mental Disturbances.* (*Journ. of Nerv. and Ment. Dis., vol. lxxvi, September–October,* 1932.) *Malamud, W., and Palmer, G.*

The authors arrive at the following provisional conclusions:

(1) In a certain number of mentally diseased persons, the development of the disease is closely related to the practice of masturbation.

(2) The conditions observed are closely associated with conflicts that are brought on by the attitudes taken towards masturbation, its effects and implications.

(3) The development of an abnormal mental state in relation to such a conflict is not an invariable concomitant of masturbation. In most persons where it was found to be the case there were a number of phenomena in which they differed from the average. The most important of these were:

(*a*) Constitutional peculiarities as evidenced by poor heredity, abnormal personality traits or both.

(*b*) Lack of proper sex education along with a history of misinformation as to alleged effects of masturbation.

(*c*) Very frequently unsatisfactory general environmental situation.

(4) The development of the abnormal state showed no definite relationship to the continuation of masturbation into the adult life, and in this case the authors found no proof of the supposition that it was excessive masturbation that led to the development of the disturbances.

(5) Psychotherapy was found to be very affective in the readjustment of the patients. G. W. T. H. FLEMING.

Pavlov's Theory of Schizophrenia.

At the meeting of the Boston Society of Psychiatry and Neurology on October 22, 1931, Dr. J. Kasanin read a paper which was a translation of what seemed to him the most important passages in two articles read by Pavlov in January, 1930, in Leningrad, and subsequently published in a small book. These passages seem to warrant *verbatim* reproduction, and are reproduced from the *Archives of Neurology and Psychiatry,* July, 1932, p. 210, by kind permission of the Editor and of Dr. J. Kasanin:

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" Studying the highest nervous activity of dogs we found a certain definite type of response of the central nervous system. A study of a large number of dogs, conducted for over thirty years, led to the development of a classification closely allied to the old Hippocratic theory of temperaments. In the first place we found two clear-cut types—the impetuous or excitable type, and the inhibited type. I have always pointed out that all conscious activity of animals consists of an interaction of two fundamental processes, the process of excitation and the process of inhibition. In our dogs we found, on the one hand, the impetuous type, characterized largely by easy excitability and lack of strong inhibitions, and, on the other, an inhibitory type with a well-expressed dominance of inhibitory processes and quick exhaustion of excitations.

" Let an example of the impetuous type be taken. A positively conditioned food reflex is formed to a certain rate of tone vibrations, and then a negative reflex is established to the next frequency of vibrations in which no food is given. The dog of the impetuous type has difficulty in controlling responses. In spite of repeated training, he still responds to the negatively conditioned reflex with a slight amount of salivation, although no food is given. Consequently, the dog of the impetuous type lacks inhibitions, and the process of excitation is stronger than the process of inhibition. At the same time, this dog can stand a great number of stimuli without showing any ill-effect. The inhibitory type of nervous system presents a different picture. A dog of this type quickly forms conditioned inhibitions, but shows inadequacy of its responses to excitation. One no sooner applies a strong stimulus than the dog becomes more or less inhibited and completely incapable of nervous activity.

" Between these two extreme types is found the medial type, with well-balanced excitations and inhibitions. In our material the well-balanced type can be differentiated into two subtypes, one that is naturally calm and collected, while the other is more alert and vivacious. If we apply to these types the ancient classification of temperaments, then the impetuous type would be called the choleric and the inhibited type would be grouped with the melancholic ; the well-balanced type would correspond to the quiet or phlegmatic type, or, on the other hand, to the sanguine type, *i.e.*, a subject that constantly demands stimulation for his activity.

" With this introduction on the physiological study of the central nervous system, I can pass to the more pathological aspects of our material. As one might guess in the beginning, the deviations from the norm represented by the two extreme types are the pathologic or unbalanced types. You know that normal nerve activity is a result of two processes, excitation and inhibition, in a very complex inter-relationship, and you can well imagine that the extreme types, which are incapable of integrating and co-ordinating their fundamental nervous processes, will naturally break down much sooner under various stresses and strains.

" This conclusion is supported by experimental facts. If a dog of the impetuous type has to balance the processes of inhibition and excitation under difficult conditions, as, for example, when the conditioned inhibitory stimulus follows immediately after an excitatory stimulus, the animal becomes extremely excited and loses its capacity for the development of inhibitions. The state of marked irritability of the nervous system as a result of close juxtaposition of the excitatory and inhibitory processes with a loss of capacity for inhibitions I have called neurasthenia, which, of course, is incorrect philologically.

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"To what extent this condition compares with the clinical concept of neurasthenia is beyond my competence, and can be decided only by a neuropsychiatrist. We have had cases of such neurasthenia in our laboratory. We were able to produce the condition experimentally and, what is more important, we even treated the animals and restored mental health. In this respect we were helped by medications that are used for human beings, especially bromides. Apparently, if bromides are used occasionally for several weeks, the animal regains a capacity for solving difficult problems.

"Turning to a study of the behaviour of inhibited animals under similar conditions, if such an animal is subjected to very strong stimuli and the inhibitory and excitatory stimuli follow one after the other without any interval, the animal becomes unable to respond to more conditional stimuli. In my cases we noticed that the dogs lapsed into a chronic inhibitory state, even losing their capacity for responding to weak stimuli. A remarkable illustration of this phenomenon was supplied by the great flood at Leningrad in 1924. The dogs in our laboratory were in danger of drowning. Through the general tumult of the flood, the roar of falling trees and high waves attacking the building, the dogs had to be rescued by making them swim a certain distance and then getting them to the upper stories of the building. As a result, many of the animals became seriously ill. The strong, impetuous dogs stood the test very well, while the inhibitory dogs became sick. They lost all the reflexes that they had learned, and had to be helped even with the conditioned food reflexes, *i.e.*, they had to be coaxed to eat. Some of the dogs never recovered from this nervous state. There is an interesting case of a dog that becomes incapacitated whenever we apply strong stimuli. When many stimuli are applied at the same time he becomes completely inhibited. This dog can work only when he is in his fixed, favourable environment. Such a state, in which the nervous activity under the influence of strong stimuli expresses itself largely in inhibitions, I have named hysteria, qualifying this term, of course, in relation to dogs.

"It is curious to note that the objection to the use for dogs of the term "hysteria" is based on the fact that in human beings in hysteria there are not only states of inhibition, but marked states of excitement. This objection, however, does not contradict the experimental facts. The dogs of inhibitory type often show outbursts of excitement. I may cite the example of a dog of this type that had to be kept in a holder for long periods. This docile and rather cowardly animal would become extremely excited after being released from the holder. I shall bring up later some facts explaining this phenomenon.

"There is another fact that constantly comes up in our material, and that can perhaps explain some of the pathological processes of the central nervous system. It has already been pointed out that the brain is a complicated organization, all parts of which interact with each other. However, one can isolate one area by incapacitating it while the activity of the rest of the brain remains unimpaired. Suppose that a series of conditional reflexes is established, various sound stimuli, such as noises, ringing of bells and metronome vibrations being used. Each one of these stimuli acts on some definite area in the cortex. It is possible to put out of order any point in an analysing area of the cortex without disturbing other points in the same area. Suppose that an animal learns to differentiate between two frequencies of tone vibrations. It forms a conditioned food reflex to a vibration rate of 100 beats per minute,

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and a negative reflex not supported by any food to a frequency of 95 vibrations per minute. Thus an inhibitory reaction to 95 vibrations per minute develops. After these conditioned positive and negative responses have been established, one begins to apply the stimuli one after the other without any interval, occasionally reversing the order. An overlapping of the positive and negative stimuli is produced, and a specific analysing area in the cortex becomes incapacitated or sick. The law that states that the response is directly proportional to the intensity of the stimulus does not hold true. To weaker stimuli one secures much stronger responses. The cells in the analysing area are weakened and cannot stand strong stimuli. If the sound analysing area is still more deeply involved, even weak stimuli give no response. Both weak and strong stimuli result in complete inhibition at the given point, which spreads all over the cortex, completely modifying the behaviour of the animal. At the same time, all other points in the sound-analysing area of the cortex remains unimpaired; thus, if other sound stimuli are applied the response and the general behaviour are normal; as soon as the metronome begins to swing at the rate of 95 or 100 beats per minute the paradoxical phase of inhibition develops, and all conditioned reflexes disappear; this state may last for several days.

"A study of the hypnotic state of our animals led to an understanding of some symptoms encountered in mental diseases. As already stated, between the two extremes of the waking condition and sleep there are transitory states, which appear in dogs as phases of gradually increasing inhibition. Inhibition developing in one area of the cortex spreads partially through the rest of the cortex, attacking some areas and leaving others free, varying not only in the direction of the spread, but also in the intensity of the process. As an illustration, a conditioned food reflex usually expresses itself in two ways: on the one hand there is increased salivation, and on the other hand there occurs the motor reaction to food—the dog looks at the food, tries to reach it, opens its mouth, etc. But as soon as the animal lapses into the hypnotic state, no matter what the cause, there appears evidence of dissociation. On application of the conditioned reflex the saliva begins to flow; consequently the stimulus is acting; but when the dog is given food he refuses it. A strange picture. The animal becomes stimulated by the signal, and yet does not take the food. The explanation is simple. As soon as the hypnotic state is broken, the animal begins to eat. This striking fact has a simple explanation: Voluntary movements originate in special areas of the motor cortex, and although other areas of the cortex escape, including those that control salivation, the motor areas are inhibited.

"This is an example of dissociation of the activity of the cerebral hemispheres. The motor areas of the hemispheres are inhibited, while other areas remain active. Another detail in the experiment makes it particularly curious. It appears that the whole motor area is not inhibited at once, but that the inhibition progresses in a certain order which has a firm physiological foundation. When the dog is given food, a series of kinetic phenomena appear. The trunk turns in the direction of the food, the cervical muscles flex the head, the muscles of mastication begin to contract, etc. Inhibition as well as excitation follows a certain order. When the hypnotic state begins, the first sign that the dog shows is inability to contract the muscles of mastication, other motions being left free. There appears the following picture: The conditioned stimulus is applied, the saliva begins to flow, the dog turns to the food and bends its

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head, and yet cannot take the food, the tongue protrudes as if it were paralysed and the animal is unable to open its mouth and chew. This process coincides with other facts in pathology—the inhibition, or the pathological process, attacks first those areas which previously were most active.

" Other states follow. The dog will turn its body but will not bend its head ; if the inhibition spreads, even the turning of the body disappears and the dog remains standing in one place. When inhibitions spread through the whole hemisphere, the dog becomes cataleptic ; it stands as if ossified, all motions disappear, and no reflexes can be elicited.

" It is obvious that the inhibition not only spreads through the hemispheres but attacks the basal ganglia ; without disturbing, however, certain centres dealing with the sense of motion and position. When, however, inhibitions spread even to these centres, complete sleep with relaxation of the musculature occurs.

" Thus, inhibition may be differentiated according to its intensity and localization ; dissociation of the activity of the brain takes place not only in the cortex, but in the subcortical centres, giving rise to a variety of phenomena. It is easy to imagine how rich this variety is in man, who differs from other animals in the size of his brain and in the tremendous complexity of its functions. The general principles of higher nerve activity are the same in man as in the higher mammals. I was convinced of this after I saw the behaviour of patients in the wards. Through the courtesy of Prof. Ostankov and his associates I saw cases of the various forms of dementia præcox. Comparing them with my own material, I came to the conclusion that the various stages of the disease are merely phases of a hypnotic state, which can be explained in the light of our experimental data which deal extensively with the process of inhibition. In order to make this conclusion clearer I shall discuss an extremely important feature of our work, namely, the relationship of the cortex to the subcortical areas.

" The higher nerve activity is composed of the activity of the cortex and of the basal ganglia, representing a united activity of these two important parts of the central nervous system.

" The basal ganglia are the centres of the most important unconditioned reflexes or instincts, such as those of food, self-defence, sex, etc., representing the main life-stream of the living organism. In the subcortical centres are the foundations of overt activities of the organism. From a physiological point of view the subcortical centres are characterized by their inertness to stimuli, whether excitatory or inhibitory. The dog in which the cerebral hemispheres have been removed responds to only a few of a great many stimuli to which it is exposed. The outside world is thus narrowed. The same dog is unable to extinguish its reflex response. For example, it is incapable of inhibiting its orienting reflex to frequently repeated stimuli, while, in a normal dog, the reflex becomes extinguished after it is repeated four or five times. The functions of the hemisphere as compared with the basal ganglia consist in a fine, extensive and delicate analysis of all stimuli coming from within or without. Compared with the crude activity of the basal ganglia, the cortex is responsible for the finer movements of co-ordinating the organism more precisely and accurately with its environment. On the other hand, the basal ganglia are the source of crude activities which are eventually utilized by the cortex. Everyday facts demonstrate the influence of the subcortical centres on the cortex. A hungry animal that has not been fed for twenty-four hours will

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show large conditioned food reflexes, but a dog recently fed will give much smaller responses.

" I have pointed out that the amplitude of a response depends on the strength of the stimulus, provided there is a constant food intake for twenty-four hours ; but as soon as responsiveness to the food is stimulated, either by decrease in the ration of food or by delay of the meal, the rule no longer holds true. Both weak and strong stimuli elicit the same degree of response. What appears more often is that weak stimuli produce stronger responses than strong stimuli. This is what I call an equalizing or paradoxical phenomenon. By reversal of the experiment, *i.e.*, decreasing the responsiveness to food in the dog by feeding him just before the experiment, the same response is obtained to both kinds of stimuli. There is, however, a fundamental difference. The equalization of responses takes place on a higher level in the first series of experiments than in the second series. Eventually the dog does not take food with strong stimuli, but does take some when weak stimuli are applied. In both cases the strong stimuli lose their potency, whether the dog is hungry, or whether he has eaten just before the experiment ; the degree of response falls below the usual norm. This can be explained by the fact that when sensitivity to food is raised, strongly stimulated subcortical centres charge the cortex, increasing the lability of the cells. The strong stimuli become supermaximal, eliciting an inhibitory reaction. Conversely, in lowering of the responsiveness to food, the impulses from the basal ganglia are weak and the lability of the cortical cells becomes decreased, especially of those cells that were under stronger stimulation previously. The influence of the subcortical centres on the cortex is seen clearly when only weak stimuli are applied. A definite law becomes apparent—the effect of the weak stimuli depends directly on the lowering or heightening of the responsiveness of the animal to food, *i.e.*, it becomes increased with heightening of the sensitivity to food and decreases with its lowering.

" This influence of subcortical centres on the cortex is substantiated by other experiments. A dog with fatigued cortical cells, in which the reflexes were very weak, was subjected to ligation of the vas deferens and transplantation of testes from another dog. This was probably followed by an increase in secretion of the sex hormone. The operation was beneficial to the dog, all reflexes were restored, and the nerve-cells again became capable of solving difficult problems. The beneficial results lasted only a short time. Within two or three months the dog returned to the original state. When gonads were removed from normal healthy dogs, a marked disturbance of the nervous system developed which resembled clinically an attack of hysteria or perhaps early dementia præcox.

" The subcortical centres are a source of energy of all higher nerve activity, and the cortex becomes the regulator of this blind force, controlling it and directing it. The inhibitory influence of the cortex, already established by Setchenoff, becomes apparent in one of our experiments which may be of importance clinically. I saw an ordinary case of war neurosis. The patient, a former colonel in the army, was well during the day, but whenever he fell asleep he became very excited, waved his hands, yelled and issued commands ; in other words, he lived through his experiences in the war every night. We were able to reproduce a similar condition in a dog. A dog was trained to respond to various sounds of the same musical instrument in connection with some other unconditioned reflex. One of the reflexes was connected with injection of acid, others with reactions to food, and still others with very strong

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stimulation of the paws with an electrical current. The electrical stimulus applied was so strong that a very strong defence reaction developed, with an attempt to break away from the holder, loud barking, etc. The defence reaction was so intense that the dog responded in the same way to the giving of food and acid, even though the two types of stimuli were never applied together. After a while the experimentation was continued with only the food reflex, while the acid and the electrical stimulus were dropped. The defence reaction in connection with the food reflex also gradually disappeared within two months. Still later another fact was observed. When the dog was hypnotized, as was shown by the paradoxical reflex, he would show a marked defence reaction immediately after eating. As soon as the hypnotic state was lifted, the defence mechanism disappeared. The analogy with the clinical case was striking. In both cases the severe experiences took place a long time before ; yet their dynamic influence revealed itself after the subjects lapsed into sleep. This can be explained by the theory that the subcortical centres retained traces of former strong stimuli, which became apparent only when the cortex was inhibited, or when there was a positive induction from the cortex into the subcortical centres.

" After one has become acquainted with the activity of the cortex and of the basal ganglia in general, my interpretation of schizophrenia as an inhibitory state of the cortex becomes clear. My attention was called to a symptom which apparently has no special name in psychiatry. The symptom consists in the fact that the patient does not reply to a given question and refuses contact with the examiner, yet the same patient may talk to the physician when he is put into quiet and pleasant surroundings. This is the same situation as that of the dog which does not respond to strong stimuli but responds to weaker ones. I understand such symptoms as echolalia, echopraxia and stereotypy as various stages of a hypnosis, which concentrates its action in one or more parts of the cortex. There is sufficient evidence to warrant looking on schizophrenia as an inhibitory state of the cortex protecting the nerve-cells from further exhaustion. The mild facetiousness and silliness in hebephrenia can be explained by an attempt of the subcortical centres to free themselves from the inhibitory influence of the cortex.

" I have called attention to the great variability of the hypnotic states in animals, and to the dissociation in the activity of the hemispheres when some areas in the cortex are stimulated while other areas are inhibited. It is easy to imagine how great this variety is in human beings. It would require a tremendous effort to orient oneself in this complexity, but I feel some satisfaction in our work, not simply because some of the facts that we have discovered can be applied to man, but because we have developed a method for getting facts that will help in the study of the highest nerve activity.

" In our material we have produced cases of neurosis experimentally in dogs, and we believe that it is possible to produce in dogs other conditions that would resemble psychoses in human beings. This was why I decided to take up again the study of psychiatry, which I had forgotten after my student days. By the courtesy of my colleagues, Profs. Ostankov and Narbutovich, I had an opportunity to observe the various psychoses. The first group I studied was schizophrenia. Here my attention was called on the one hand to the symptoms of apathy, dullness, stupor and stereotypy, and on the other hand to the facetiousness, silliness and, in general, childish behaviour, which the patients had not shown before the illness. What are these symptoms from a

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physiological point of view? Can they be understood and thought of in physiological terms? For this one must turn to the data that we have obtained in our work with conditioned reflexes. These data throw a good deal of light on the process of inhibition in its physiologic and pathologic aspects.

" Inhibition, taking an equal part with excitation in the everyday activity of the animal, also acts as a guardian of the most active cells in the brain, *i.e.*, the cells in the cortex, protecting them from too much exertion when they are stimulated by very strong stimuli, or when they are continually stimulated by weaker stimuli. It is the function of inhibition, then, to secure for the cortical cells a period of normal rest after a long period of activity.

" I am certain that sleep is nothing else than an inhibition that has spread over the cortex and has penetrated to a certain depth into the brain. We have also had the opportunity to study in our animals the intermediary stages between sleep and wakefulness—that is, the hypnotic phases. We think of these phases, on the one hand, as various degrees of intensity of inhibition, *i.e.*, greater or lesser diffusions of inhibition in various areas of the brain; on the other hand, we look on them as degrees of intensity of inhibition of varying depth in the same area of the brain. With the tremendous complexity of the human brain, the variety of hypnotic states in man is great. But some hypnotic states are more pronounced in animals than they are in man; even in man the hypnotic states show a great deal of variability, depending on the individual patient and on the method of hypnosis. For this reason, realizing the complexity of the subject, I shall consider the hypnotic states both in animals and in man.

" A study of the schizophrenic symptoms mentioned led me to the conclusion that they are an expression of a chronic hypnotic state—a point of view that I shall maintain in this paper. True, apathy, dullness and immobility are no proof of the hypnotic states, but neither do they contradict this view, especially if my thesis finds confirmation in other more specific symptoms.

" First, I shall cite the following facts: Usually the patient is considered apathetic and dull because he does not reply to the psychiatrist's questions. It is considered that his emotional life is impaired. But if one asks the same questions quietly in a pleasant, informal way, one often gets a reply. This is a striking phenomenon to which little attention is paid. In my opinion this symptom is one of the most definite evidences of a beginning hypnosis. We constantly see this paradoxical phase when strong stimuli elicit no response, but weak stimuli give a normal reaction. In a case of hypnosis of five years' duration described by Janet, this was the way in which he was able to establish a contact with the patient. The patient was freed from her hypnotic state when all strong stimuli were removed. Then, in schizophrenia there occurs what is commonly described as negativism. In our experimental animals, negativism is commonly encountered in the beginning of the hypnosis. With the conditioned excitation associated with the food reflex the dog is offered food, but stubbornly refuses it. One detail is significant. When the food-box is removed the dog tries to reach it. This may happen several times in succession. No sooner is the hypnosis broken than the dog immediately laps up the contents of the food-box which he had previously refused.

" Another symptom of schizophrenia is stereotypy, *i.e.*, a tendency toward repetition of various movements, postures, attitudes, etc. This is also a hypnotic phenomenon. In some of our dogs it can be observed clearly. A dog fully awake, after he gets through eating in a setting of a conditioned food reflex, often begins to lick his own paws and chest and the anterior part of

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his body. In the beginning hypnosis this licking becomes extremely prolonged, going on hour after hour until the next feeding. Some other motions also tend to be repeated indefinitely.

" A frequent symptom of schizophrenia is catalepsy—retention of certain fixed postures with the accompanying phenomenon of waxy flexibility. A more dramatic symptom is catatonia—a state of marked tension of the skeletal muscles, which resist attempts at relaxation coming from the outside. Catatonia is nothing but a discharge of tonic reflexes, such as occurs in the subject who becomes rigid as a board in hypnosis.

" The variety of symptoms induced by central inhibition is enriched by the playfulness and silliness seen in hebephrenic subjects, as well as the outbursts of excitement with aggressiveness that are observed in other groups of persons with schizophrenia. These symptoms resemble the picture of beginning alcoholic intoxication, or the behaviour of young puppies or infants on awakening or falling asleep.

" All these symptoms can be looked on as a result of beginning inhibition of the cortex, so that the subcortical areas not only are released from the constant inhibition exercised on them by the cortex, but get into a state of chaotic excitation by virtue of the mechanism of positive induction. Hence, in alcoholic intoxication there are happiness and hilarity without rhyme or reason, or excessive sentimentality without crying or outbursts of anger. The same phenomenon is seen in children with tantrums of temper before they fall asleep. An infant, æt. 6 months, when falling asleep presents a remarkable picture. In the baby's face there is a kaleidoscopic variety of expressions due to the chaotic activity of the paleoencephalon. In the various stages of the disease a schizophrenic patient presents the same phenomenon, either in long spells or as temporary explosions.

" After all that has been said, it is apparent that schizophrenia in some of its phases and manifestations is a state of chronic hypnosis. The state may last for years. Bearing in mind the case of somnambulism, of five years' duration, reported by Janet, and a case reported in Leningrad which lasted twenty years, why cannot hypnosis last for years, especially when the condition in the cases cited resembles hypnosis more than sleep ?

" What causes the chronic hypnosis of schizophrenia ? What factors are physiological and which are pathological ? What are the causes of the outcome ?

" The fundamental cause of the hypnosis is a weak nervous system, with special weakness of the cortical cells. This weakness has many causes, both constitutional and environmental. I shall not discuss these causes here, but it is obvious that such a nervous system becomes quickly exhausted when subjected to various physiological stresses as well as to unfavourable environmental factors. Exhaustion is the strongest physiological stimulus for the appearance of inhibition as a protective reaction. Hence, there appears a chronic hypnosis—an inhibition in its various manifestations. This state is pathological, because it robs the patient of his normal activity, but by virtue of its mechanism it is really physiological. It protects the cortical cells from the complete destruction with which they were threatened by the impossible load. In our laboratory we have an example of prolonged inhibition which restored to the weak cortical cells the capacity for normal activity. There is reason to believe that while the inhibitory process is acting the cortical cells are no longer damaged, and that there is a chance for a return to normal function

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—that the pathological reaction is reversible. This process, in accordance with modern terminology, means a functional disorder. That this is so can be confirmed by the following fact: The catatonic form of schizophrenia, that is, that form of the disease that is characterized particularly by hypnotic manifestations, shows a fairly high percentage of recoveries, which does not hold true in other forms of the disease.

" In conclusion, permit me to make a therapeutic suggestion, even though it may sound sentimental. No matter how magnificent has been the progress in the treatment of the mentally ill, there is something lacking. The mixing together of patients with various degrees of insight and behaviour, and the lack of segregation of quiet from extremely noisy and excited ones who undoubtedly annoy the quiet patients and sometimes abuse them, can be looked on as an additional load on the already weakened cortical cells. The realization of the loss of freedom, which, of course, may be necessary, also ' adds insult to injury '. It seems to me that mentally sick patients should be treated, as are all other persons who suffer from physical disease, in such a manner that the treatment does not rob the patients of dignity and self-respect."

Dr. Franz Alexander, in the discussion that followed, pointed out that one of Pavlov's pupils, Schinson, had published two books on the subject. Dr. Kasanin pointed out that Pavlov gives excellent psychobiological explanations of some of the most cardinal symptoms of schizophrenia.

G. W. T. H. FLEMING.

So-called Extrapyramidal Reflexes in Various Diseases of the Central Nervous System, particularly in Catatonic Dementia Præcox [*Sui cosidetti riflessi extrapiramidali in varie malattie del sistema nervosa centrale, nella demenza precoce catatonica in ispecie*]. (*Riv. Sper. di Freniat., vol. lv, September,* 1931.) *Severino, A.*

The author considers the reflexes of Puussep and of Schrijwer-Bernhard and the pressure reflex of Södenberg to be extrapyramidal, and the phenomena of Boveri and Piotrowski not to be so. He examined thirty non-catatonic cases, thirty-four neurological cases of various types, and twenty-four cases of functional disorders.

The reflexes were usually more frequent in the organic than in the functional disorders.

The reflexes of Puussep, Schrijwer-Bernhard and Södenberg were infrequent in the hebephrenic and paranoid types of dementia præcox, but frequent in the catatonic types.

The author considers that his findings support the organic origin of dementia præcox, particularly the catatonic type. G. W. T. H. FLEMING.

Fragments of a Schizophrenic's " Virgin Mary " Delusions. (*Amer. Journ. Psychiat., vol. xii, September,* 1932.) *Thomas, J. M.*

The report of a patient who has for six years claimed to be the Immaculate Virgin Mary, Mother of God. The case is unusual, in that the patient co-operated in a prolonged psychological analysis. Certain accepted religious experiences have been utilized to render tolerable certain instinctive urges. Interesting relations are traced with the autobiography of St. Thérèse of Lisieux (" The Little Flower "). M. HAMBLIN SMITH.

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Insight in the Hallucinated [*La Croyance de l'halluciné*]. (*Ann. Méd.-Psych., June*, 1932.) *Ey, H.*

The writer, who regards the essential feature of the hallucination, isolating it from the illusion, paræsthesia, and hallucinosis, to be a belief in the perception of a non-existent object, brings forward evidence refuting Quercy's mechanistic hypothesis. It is pointed out that the latter's theory concerning the relationship between morbid sensory stimuli and hallucination offers no explanation as to why loss of insight occurs; it is also shown that subjective sensory experiences are neither sufficient nor even necessary to produce false objectivation. S. M. COLEMAN.

A Contribution to the Study of Chronic Hallucinatory Psychosis [*Contributo allo studio della psicosi allucinatoria cronica*]. (*Riv. Sper. di Freniat., vol. lv, September*, 1931.) *Berlucchi, C.*

The author describes four cases of chronic hallucinatory psychosis, the concept of which we owe largely to de Clérambault. He considers that the ideas of reference and influence found are based primarily on a disturbance of the personality, and in particular of the intelligence, and that the condition should be included within the schizophrenic group of disorders. The hallucinations arise in association with a delirium which is occasionally due to overindulgence in alcohol. G. W. T. H. FLEMING.

The Conception of Paranoia During the Nineteenth Century [*Conceito da paranoia através do seculo XIX*]. (*Revista da Assoc. Paulista de Med., April*, 1932.) *Da Rocha, F.*

The varying and widely differing connotations in which the term "paranoia" has been used are reviewed. Special consideration is given to the idea of paranoia which was popular under the influence of Lombroso's "anatomical" view of the criminal; the author believes that Freud's conceptions bear a close resemblance to those of this school. On the whole, the British view of the matter is regarded as most worthy of commendation. The antecedents of paranoia are to be found in parental alcoholism and hysteria and other hereditary diseases, as well as in certain affections of the individual patient during the period of development of the principal nervous centres. Congenital syphilis may be a cause of paranoia, as well as of other forms of degeneration. The conclusion, however, is that "we know the facts of degeneration, for we observe them every day; but we do not know the processes through which they realize themselves". M. HAMBLIN SMITH.

Body Interest in Children and Hypochondriasis. (*Amer. Journ. Psychiat., vol. xii, September*, 1932.) *Levy, D. M.*

The various sources of experiences adapted to the development of such symptomatology are (1) exposure in early life to numerous complaints of illnesses, invalidism, or death. (2) Actual experience of frequent illness, operations, or contacts with physicians. (3) Strong identification with an ailing person or one who exaggerates body sensations, so that the sick *milieu* becomes one's own sensations. (4) Exaggerated response to pleasurable body sensations, through reinforcement of erogenous zones. This is specially marked

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when there has been long confinement to bed. (5) Social situations in which actual illness or deformity is utilized for the purpose of gaining love or attention, or of avoiding unpleasant situations. M. HAMBLIN SMITH.

Tactual Perception in Alcoholism. (*Arch. of Neur. and Psychiat., vol. xxviii, July,* 1932.) *Bromberg, W.*

In a group of sixteen patients with alcoholic psychosis definite changes were found in sensation. These changes are due to organic processes going on in the peripheral or cerebral vestibular and tactual apparatus. The duration of the after-effects was prolonged, and was probably related to the direct effect of the alcoholic cerebral intoxication. One of the most marked observations was the feeling of movement, especially of rapid movement, in the after-effects ; often there was a rapid diminution in the size of the objects seen and felt. The patients often felt numerous drops or particles on the skin and thought that they were somehow connected with water. All the movement tendencies are to be considered as products of disintegration of tactual sensation—this is probably due to vestibular influences.

In a comparative group of ten schizophrenic patients the duration of the tactual phenomenon was on the average slightly less than in normal subjects.

Schizophrenic hallucinations had a different mechanism from those of alcoholism. Bevinger has found an analogy between the reactions of normal exhausted persons and those with schizophrenia. Cross-points and angles in geometric figures were noticeably present in the after-images in patients in the schizophrenic group. Wavy lines were observed, extending into the air or horizontally with the rising phase of the waved line corresponding to bars crossed by the experimenter's finger. G. W. T. H. FLEMING.

A Clinical Study of Psychoses Associated with Various Types of Endocrinopathy. (*Amer. Journ. Psychiat., vol. xii, September,* 1932.) *Notkin, J.*

Only 8 such cases were found in a hospital population of 6,000 patients. This infrequency seems to indicate that the relationship of endocrine dysfunction to mental disorders has been much overrated. The great stress which was put upon disturbances in the calcium and the lipin metabolism, and offered as an ætiological factor in mental disorders, does not seem to be justified ; the deviations found in this study were minimal. No direct ætiological relationship between endocrine dysfunction and psychosis was found, except in the cases of three hebephrenics where a constitutional anomaly led to both physical and mental aberrations. M. HAMBLIN SMITH.

Psychosis : Its Importance as a Presenting Symptom of Brain Tumour. (*Amer. Journ. Psychiat., vol. xii, September,* 1932.) *Adelstein, L. J., and Carter, M. G.*

Psychosis may be the first presenting symptom in brain tumour; and in every case of psychosis the possibility of tumour should be ruled out by neurological examination. Auditory hallucinations are of localizing value if separate and distinctly apart from a psychosis. The most marked mental changes were found in cases of tumours involving the frontal lobes and the corpus callosum. M. HAMBLIN SMITH.

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Amyotrophic Lateral Sclerosis with Mental Symptoms. (*Arch. of Neur. and Psychiat., vol. xxvii, April,* 1932.) *Wechsler, J. S., and Davison, C.*

In a large majority of cases of amyotrophic lateral sclerosis there are no definite mental symptoms. Most cases reported are probably associated with a schizophrenic or manic-depressive condition. In cases occurring in patients with cerebral arterio-sclerosis, the mental symptoms are more likely to be due to the latter. In the three cases described, however, the authors definitely attribute the psychotic symptoms to the degenerative process underlying the motor syndrome. G. W. T. H. FLEMING.

Early Diagnosis of Progressive General Paralysis. [*Diagnóstico precoz de la Paralisis General Progressiva*]. (*Actualidad Medica Mundial, August,* 1932.) *Salamon, W.*

Only by examination of the cerebro-spinal fluid is it possible to diagnose early progressive paralysis with certainty. This method should be employed in all psychical reactions the diagnosis of which is not perfectly clear.

M. HAMBLIN SMITH.

Lissauer's Dementia Paralytica. (*Arch. of Neur. and Psychiat., vol. xxvii, May,* 1932.) *Merritt, H. H., and Springlova, M.*

The authors describe eight cases of Lissauer's dementia paralytica. They found pronounced atrophy of certain convolutions. The temporal lobe was usually the centre of the atrophy; the inferior parietal lobe was involved in all cases. Microscopically the atrophic convolutions showed *status spongiosus*, usually most obvious at the apex of the convolution. In all these cases a peculiar type of cell reaction was found in the small ganglion cells of the fifth and sixth cortical layers of the convolutions showing *status spongiosus*. These cells were swollen and rounded, and the nucleus displaced to the periphery of the cell. With Bielschowsky's stain, the body of each cell was homogeneously impregnated and appeared to be filled with fine, dust-like particles. This type of cell reaction has been described as "Zellblahungen" in Pick's disease and was considered peculiar to that disease. In these cases of Lissauer's paralysis the degree of tissue destruction was much greater than in the usual case of Pick's disease.

In most cases the degree of inflammatory reaction in the meninges and round the cortical blood-vessels was less than in the average case of dementia paralytica. In all these cases there was marked loss of myelin in the white matter localized in the convolutions in which *status spongiosus* existed.

The lesions in the brain in Lissauer's paralysis the authors think are due to the effect of disturbance of the circulation in a brain already more or less injured by the dementia paralytica process. The area involved is that supplied by the third, fourth and fifth branches of the Sylvian artery.

G. W. T. H. FLEMING.

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4. Neurology.

Suboccipital or Lumbar Puncture [*Punção sub-occipital ou lombar*]. (*Revista da Assoc. Paulista de Med., April,* 1932.) *Lange, O.*

Various accidents may occur during the operation of lumbar puncture, and sundry undesirable conditions may follow this procedure. The author prefers suboccipital puncture, which is largely practised in Brazil. He considers that the procedure may be carried out with minimal risk, but three conditions are absolutely necessary—complete immobility of the patient; correct position of the patient with the spinal canal in perfect correspondence with its occipital orifice; introduction of the needle exactly in the median plane, half a centimetre above the spinous process of the axis, and exactly perpendicular to the skin. M. HAMBLIN SMITH.

Pseudo-Tuberculous Meningites [*Meningites pseudo tuberculosas*]. (*Revista da Assoc. Paulista de Med., March,* 1932.) *Lange, O.*

The controversies upon the curability of tuberculous meningitis are reviewed, as is also the work which has been done, in various countries, on those acute and benign meningitic syndromes which resemble tuberculous meningitis. The author discusses the causes which may determine the onset of these acute meningites. He considers the names which have been applied to these conditions, and expresses his preference for the term " acute benign lymphocytic meningites ". The work which has been done by the injection into animals of cerebro-spinal fluid taken from patients who suffer from these forms of meningitis is reviewed. There is a description of two cases now under observation at São Paulo, Brazil. M. HAMBLIN SMITH.

Right Hemiplegia with Broca's Aphasia [*Hemiplegia direita com afarsia de Broca*]. (*Revista da Assoc. Paulista de Med., March,* 1932.) *Galloti, O., Filho, A., and de Carvalho, A. H.*

A fatal case of a man who had contracted syphilis which produced hemiplegia consequent upon cerebral softening. The clinical signs are recorded; and there is a discussion of the anatomical questions involved.

M. HAMBLIN SMITH.

A Case Presenting a Lesion of the Four Last Cranial Nerves on the Left Side [*Sobre um caso de lesão dos quatro ultimos nervos cranianos do lado esquerdo*]. (*Revista da Assoc. Paulista de Med., April,* 1932.) *Bacelar, A.*

The description of a curious case in which a woman exhibited various left-sided buccal and pharyngeal paralyses and anæsthesias, resulting from a pistol-bullet wound on the side of the head. Surgical interference was to be undertaken. M. HAMBLIN SMITH.

The Sex Ratio in Migraine. (*Arch. of Neur. and Psychiat., vol. xxvii, June,* 1932.) *Allan, W.*

The author finds that the incidence of migraine is the same in men as in women. In women, however, it is a more severe malady, as shown by the

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greater duration of the headaches and the somewhat greater frequency of nausea and vomiting. G. W. T. H. FLEMING.

Causes of Epilepsy. (*Arch. of Neur. and Psychiat., vol. xxvii, May,* 1932.) *Cobb, S.*

Fifty-six clinical causes of fits are grouped and discussed, and the author points out that thirteen physiological mechanisms have been put forward. It is considered likely that embryological defect and tissue destruction act by altering neural conduction. Congestion, asphyxia, vaso-constriction and increased intracranial pressure might all act by means of cerebral anoxæmia. Hydration and dehydration act through chemical changes. A large group of drugs and chemicals cause convulsions by some entirely unknown mechanism. G. W. T. H. FLEMING.

Extramural Patients with Epilepsy. (*Arch. of Neur. and Psychiat., vol. xxviii, August,* 1932.) *Paskind, H. A.*

The author studied 304 patients in private practice who had had epilepsy for over six years, and in some instances for two, three and four decades, and found that only 6·5% showed deterioration. The non-deteriorated patients came from a stock less heavily burdened with neuropathy ; the onset was on the whole somewhat later, the attacks less frequent and the remissions more frequent and longer. G. W. T. H. FLEMING.

Epilepsy and Congenital Syphilis. (*Journ. of Nerv. and Ment. Dis., vol. lxxv, May,* 1932.) *Menninger, K. A., and W. C.*

The authors summarize the present position as expressed in the literature as follows :

(1) There is almost uniform agreement that congenital syphilis may produce actual anatomical alterations responsible for epileptic attacks.

(2) There is fairly general agreement that syphilis may act as a germ poison without progressing to actual brain damage, producing a spasmophilic diathesis.

(3) The weight of opinion favours the idea that congenital syphilis may be a direct or indirect cause of the epileptic syndrome, which may in an uncertain number of cases be the first, and in the others the only manifestation of the syphilitic condition.

(4) There are some workers who, through conservatism, do not feel that congenital syphilis is the proved cause of cases of so-called essential or idiopathic epilepsy, but agree that the fundamental cause is probably a developmental defect in the nervous system which may be syphilitic in origin.

(5) A few authors believe that epilepsy is totally unrelated to congenital syphilis.

(6) Some workers feel that too much weight is given to the Wassermann test, and the majority believe that syphilitic stigmata are sufficient to make a diagnosis of congenital syphilis regardless of the Wassermann test. Despite this, some writers base their conclusions as to the prevalence of syphilis entirely upon the statistics of Wassermann blood tests. In some cases the positive Wassermann test is the only sign of syphilis other than the epileptic attacks.

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The authors feel that much of the published work on this problem is based on inadequate diagnostic data. The definite diagnosis or exclusion of congenital syphilis must not be based on the presence or absence of any single symptom or sign, but only upon the presence or absence of findings in the carefully investigated hereditary, chemical and physical constituents of the individual.

The authors present 31 cases of individuals having convulsions of the idiopathic epilepsy type, which they regarded as being of congenital syphilitic ætiology, basing their opinion on the above criteria. They conclude that congenital syphilis can produce convulsions, directly and indirectly, without the presence of gross brain lesions or encephalitis (juvenile paresis), and these convulsions have all the appearances of " idiopathic " epilepsy.

From a statistical viewpoint when compared with the total numbers of epileptics and the total number of congenital syphilitics, the occurrence of congenital syphilitic epilepsy must be regarded as unusual.

G. W. T. H. FLEMING.

Syphilitic Hydrocephalus in the Adult. (*Brain, vol. lv, September,* 1932.) *Greenfield, J. G., and Stern, R. O.*

Hydrocephalus is a fairly common result of basal gummatous meningitis. Complete obstruction of the foramen of Magendie is not uncommon, and the foramina of Luschka may also be sealed by plastic meningitis. Syphilitic hydrocephalus is a more common *post-mortem* finding than the larger syphilitic gummata of the meninges. Minute gummata, sometimes of the miliary giant-celled type, are often present in hydrocephalic cases. Degeneration of the myelinated fibres on the surface of the spinal cord occurs in long-standing cases. G. W. T. H. FLEMING.

A Case of Recklinghausen's Disease, with Observations on the Associated Formation of Tumours. (*Journ. of Nerv. and Ment. Dis., vol. lxxvi, October,* 1932.) *Kernohan, J. W., and Parker, H. L.*

The authors report a case of Recklinghausen's disease in which besides the neuro-fibromatosis there were numerous meningiomas and four distinct gliomas of the spinal cord. These latter belonged to the astrocytoma and cellular ependymoma types. There was also a syringomyelia with a pre-syringomyelic stage at each end of the cavity. The neuro-fibromata of the cranial nerves and dorsal roots did not quite conform to the types of tumours supposed to be present in these situations in this disease. G. W. T. H. FLEMING.

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5. Pathology.

The Influence of Septic Infection of the Sphenoidal Sinus upon the Cerebral Blood-supply. (*Journ. Laryngol. and Otol., vol. xlvii, No.* 12, 1932.) *Pickworth, F. A.*

The author shows how the cerebral arteries may be adversely affected by contiguous sepsis of the sphenoidal sinus and naso-pharynx. The mechanisms by which this takes place are discussed under the headings of diffusion of toxic

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substances, centrifugal spread of organisms, and irregular constriction or dilatation of cerebral vessels due to involvement of the sympathetic. The lymphatics from the nasal sinuses pass finally across the superior cervical ganglion of the sympathetic, the internal carotid artery, the vagus nerve and the internal jugular vein. G. W. T. H. FLEMING.

Takata-Ara Reaction in the Cerebro-spinal Fluid [Le reazione di Takata-Ara nel liquido cefalo-rachidiano]. (*Rass. Internaz. di Clin. e Terap., vol. xii, November,* 1931.) *Curti, G.*

The author gives the results of 243 Takata-Ara reactions. He found the reaction to correspond to a considerable extent with the result of the Wassermann reaction, Weichbrodt's reaction, and the colloidal benzoin and gum-mastic reactions. He found the metaluetic type of reaction occasionally in dementia præcox, hemiplegia, cerebral tumour, post-encephalitic Parkinsonianism, etc., and thinks therefore that the reaction should not take the place of other more commonly used tests. G. W. T. H. FLEMING.

Certain Pathological Aspects of Neurosyphilis. (*Brain, vol. lv, June,* 1932.) *Stern, R. O.*

After examining a series of cases of general paralysis and tabes dorsalis, the author points out the constant presence of lesions in the basal ganglia identical with and almost as severe as those found in the cerebral cortex. Apart from the demonstration of spirochætes in the cerebral cortex, the quickest method by which general paralysis can be diagnosed histologically is by the Prussian-blue reaction. This method can be used even after prolonged fixation. In congenital cases the characteristic lesion is the degeneration and disappearance of nerve cells. G. W. T. H. FLEMING.

The Non-specificity of the Histologic Lesions of Dementia Paralytica. (*Arch. of Neur. and Psychiat., vol. xxviii, November,* 1932.) *Wertham, F.*

The author examined the nervous tissue of chickens who had suffered from *Spirochætosis gallinarum,* and found infiltration of small vessels with plasma-cells, proliferation of Hortega cells with formation of rod-cells, and iron deposits in intra-adventitial spaces and in the Hortega cells. These three changes are often regarded as the three cardinal histological signs of general paralysis. A group of apparently normal chickens were then examined and exactly the same conditions were found, due, the author assumed, to a new spontaneous disease in chickens. Jahnel examined these brains and could find no evidence of the presence of spirochætes. The author found "dementia paralytica iron" in the chicken brain. This iron test has generally been regarded as specific for general paralysis. G. W. T. H. FLEMING.

The Histopathology of Therapeutic (Tertian) Malaria. (*Amer. Journ. Psychiat., vol. xii, July,* 1932.) *Bruetsch, W. L.*

Therapeutic malaria produces an activation of the mesodermal tissue, in which the stimulation of the histiocytes and the activation of the undifferentiated mesenchymal cells are outstanding features. The immediate tissue-reaction of the body to the malaria plasmodium consists in a stimulation of

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the reticulo-endothelial apparatus, leading to a new formation of macrophago-tissue in various organs. The blood histiocytes are mainly derived from the specific endothelium. The intravascular macrophagic phagocytes are clasmato-cytes, in the sense of Sabin and others. The capillary endothelial cells do not become phagocytic while they retain their anatomical position in the vessel wall. In the nervous system the macrophagic response has been greatest in the leptomeninges. In the arachnoid the malaria-stimulated histiocyte stands out distinctly from the less active arachnoid lining cell. Around middle-sized and large cortical vessels a small increase in the number of macrophages has been found. In the perivascular spaces of the large vessels in the white matter, in the striatum, and in the pons, stimulated histiocytes are more numerous. The small mesodermal elements along the cortical capillaries have not been seen to be activated. The microglia as a whole does not take part in the general reaction of the reticulo-endothelial system.

M. HAMBLIN SMITH.

The Question of Silver Cells as Proof of the Spirochætal Origin of Disseminated Sclerosis. (*Journ. of Neur. and Psychopath., vol. xiii, July*, 1932.) *Rogers, H. J.*

Eleven cases of disseminated sclerosis were examined by Steiner's silver method, the author having previously spent a long time examining general paralytic brains to familiarize herself with the appearance of the silver cells and *Spirochæta pallida*.

In one case out of the eleven she found an organism similar to the Steiner organism, but she found the silver cells in every case, and also in many cases a histological picture resembling spirochætal fragments. The brain from cases of cerebral softening, myotonia congenita, bulbar paralysis and diffuse brain sclerosis gave uniformly negative results. The silver cells, as in general paralysis, are perivascular in position.

G. W. T. H. FLEMING.

The Brain in Acute Rheumatic Fever. (*Arch. of Neur. and Psychiat., vol. xxviii, October*, 1932.) *Winkelman, N. W., and Eckel, J. L.*

The authors describe five cases of acute rheumatic fever with autopsy findings, particular attention being directed to the brain. They point out that Neyman describes the normal person's reaction when fever is artificially produced as follows: At 102° F. there is a feeling of impending danger; at 102·5° F. the sensation of a desire to run away; at 103° F. the patients become quiet; from 103°–103·5° F. they become somnolent, but they feel well again at 105° F.; and at 106°–107° F. they become comatose.

The most uniform finding in the brain in the five cases, apart from the cloudy swelling common to all toxic conditions, was a productive endarteritis of the small cortical vessels. The size of the pericellular spaces and of the peri-vascular spaces of His was in direct relation to the amount of œdema present.

The large vessels remained relatively unaffected. The changes in the small vessels were of two kinds: (1) An acute and recent change with swelling and proliferation of the lining cells and at times with new vessel formation. This is the same type of change as is seen in the acute stage of syphilis.

(2) Thickening and hyalinization of the vessel walls. This is a later change, and appears to result from a colloid disorganization of the connective tissue,

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which begins with a separation of the intimal vessel layers outside the endothelium.

The endarteritis of the small vessels found in every case probably has two causations: (1) Purely mechanical as the result of œdema of the brain; (2) toxic irritation through the blood-stream.

Acellular areas (Verödungsherde) are frequently found in the brain, and may produce a permanent clinical picture if sufficiently numerous.

G. W. T. H. FLEMING.

Calcium Content of the Brain and its Distribution in Various Regions during Diallylbarbituric Acid Narcosis. (*Arch. of Neur. and Psychiat., vol. xxviii, August,* 1932.) *Katzenelbogen, S.*

The author estimated the calcium content of the whole brain in normal and narcotized cats and found no difference between the two.

He then examined various areas and found that the hypothalamic region from the optic chiasma to the root of the third nerve showed a higher calcium content than any other brain area in both the narcotized and control animals.

This finding suggests that calcium may play a certain *rôle* in the function of the hypothalamic region. G. W. T. H. FLEMING.

Blood-Cholesterol Studies in Mental Disease. (*Amer. Journ. Psychiat., vol. xii, September,* 1932.) *Schube, P. G.*

There are presented the total blood-cholesterol estimations, as measured in 100 c.c. of whole blood, in 54 "normal" individuals, and in 200 individuals "not normal" from a neuro-psychiatric point of view. The mean value of the "normal" group was higher than that of the "not normal" group, but the range of cholesterol estimations in the latter group covered a far greater area than that of the normal group. Of the "not normal" group there were 52% below normal range, 36% within normal range, and 12% above normal range.

M. HAMBLIN SMITH.

Cholesterol Content of Blood in Epilepsy and in Feeble-mindedness. (*Arch. of Neur. and Psychiat., vol. xxviii, August,* 1932.) *Gray, H., and McGee, L. C.*

The authors, using Bloor's method for estimating cholesterol, found an average value for whole blood in normal men of 194 mgrm. per 100 c.c. In epileptics they found an average of 165 mgrm. and in feeble-minded persons of 154 mgrm.

Convulsions were followed in about one hour by a drop in cholesterol, and thereafter there was a gradual rise extending over perhaps a month. Near an attack the ratio of the whole-blood cholesterol to the plasma cholesterol was raised owing probably to there being more cholesterol in the corpuscles and less in the plasma. G. W. T. H. FLEMING.

Basal Metabolic Rate in Epilepsy. (*Arch. of Neur. and Psychiat., vol. xxviii, July,* 1932.) *Damon, Le G. A.*

From a study of 300 epileptic patients, 50% showed abnormal metabolic rates, usually towards a low figure. More women than men showed low rates;

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neither age nor duration of the epilepsy had any influence. The percentage of low metabolic rates is greater in patients having frequent attacks.

G. W. T. H. FLEMING.

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6. Mental Deficiency.

Tuberose Sclerosis and Allied Conditions. (*Brain, vol. lv, September,* 1932.) *Critchley, M., and Earl, C. J. C.*

The authors studied 29 cases of tuberose sclerosis. They consider that the evidence is increasing that the condition is a developmental anomaly commencing early in fœtal life. The giant-cells met with are most likely a primitive type of cell not far removed from an undifferentiated neuroblast. Those cells may develop characteristics which are either glial or neuronic, hence two views as to the ætiology of the condition emerge, one regarding it as a hyperplastic disorder of the neuroglia, the other as a metaplasia affecting mainly the ectodermal tissues, but also to some extent the mesodermal and endodermal derivatives. The authors consider that the similarities between tuberose sclerosis and von Recklinghausen's disease have been rather over-emphasized.

G. W. T. H. FLEMING.

Almost Feeble-Minded. (*Psychol. Clinic, vol. xxi, June–August,* 1932.) *Rosenstein, J. L.*

Intelligence test results are of minor importance, even if they are exact. They do not tell us how the individual has obtained his score. We should be more interested in items which cannot be measured, but which must be inferred. The proper method is psychological rather than psychometric. Three cases are described in which a superficial examination would have given a diagnosis of feeble-mindedness, but in which subsequent training proved that such diagnosis was incorrect.

M. HAMBLIN SMITH.

The Rorschach Test as Applied to a Feeble-minded Group. (*Arch. of Psychol., No.* 136, 1932.) *Beck, S. J.*

The mode of attack by the feeble-minded on a problem is shown by the Rorschach test to display an absence of whole responses. The feeble-minded are more likely to react to details of the material presented than to combine the details into a meaningful whole. They are more interested in the unessential. The percentage of accurately seen forms shows an increase with advancing age. The percentage of animal responses shows the group to be more stereotyped in thought than the normal group is. Self-criticism appears about the eighth year. The percentage of original response shows that the feeble-minded are capable of originality. The movement score shows them to be almost incapable of creative fantasy. The correlation between the whole score and the mental age is not high enough to allow prediction of mental level from the whole response score. The advantages of the Rorschach test are that it is free from influence of schooling, the test material is entirely objective and simple in presentation, and the same material is

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applicable for all levels of intelligence. It is so unlike a " test " that it reduces the emotional factor to a minimum.

The author found the oligophrenic response described by Rorschach in only 20 of his 69 cases. G. W. T. H. FLEMING.

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7. Treatment.

Prolonged Narcosis as Therapy in the Psychoses. (*Amer. Journ. Psychiat., vol. xii, July,* 1932.) *Palmer, H. D., and Paine, A. L.*

Sodium amytal narcosis was used, intravenously and orally. The aim is to keep the patient in a state of profound sleep for a continuous period of 7 to 10 days, with the exception of two daily periods of half an hour for the purpose of attending to nutrition and evacuation. The drug has been found to be non-toxic, and to offer a wide margin of safety. No patient was made worse by the treatment, and 80·8% can be regarded as improved or recovered. The greatest success may be anticipated in the manic-depressive group. The mechanism of improvement or recovery seems to be psychological rather than biochemical. Small doses of sodium amytal often assist uncommunicative patients to reveal their conflicts ; and in many cases the drug facilitates the release of dreams, which furnish an abundance of material on which to base conclusions as to the dynamics of the illness. M. HAMBLIN SMITH.

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8. Criminology.

A Mental Hygiene Study of Juvenile Delinquency. (*Amer. Journ. Psychiat., vol. xii, July,* 1932.) *Levy, J.*

This report represents the results obtained during two years' work in a small child-guidance clinic. The non-delinquent children sent to the clinic were used as a control group. The non-delinquent group was equally divided as regards sex ; three-fourths of the delinquents were boys. The average age of the delinquents was 12 years, that of the non-delinquents was 14–15. This finding merely shows that criminal tendencies are taken notice of sooner than are other forms of deviation. The relatives of delinquents are likely to be handicapped by social stigmata, while those of non-delinquents show a neurotic taint. The incidence of delinquency increases as one goes down the economic scale. As regards the influence of intelligence, it would appear that the more intelligent child does not engage in delinquency until other methods of obtaining its goal have failed. Misdemeanours are secondary responses in the case of highly intelligent children, undesirable personality reactions having ante-dated delinquency. Questions of discipline and other family reactions are of the utmost importance. The delinquent child solves its sex problems by reacting to a lesser evil, *e.g.*, stealing ; the non-delinquent attempts to work through such difficulties by emotional reactions. Sexual perversion

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or inversion is found in both sexes, and this type of delinquent is usually very intelligent. A complete change of environment is the most efficacious way of terminating a delinquent career. Illustrative case-histories are provided, as also an outline for case-taking and psychiatric examination.

M. HAMBLIN SMITH.

Crime and the Endocrine Glands. (*Amer. Journ. Psychiat., vol. xii, September,* 1932.) *Berman, L.*

Habitual criminals show signs of deficient and unbalanced endocrine function almost three times as frequently as the normal average population. The majority of these criminals are derived from the group of juvenile delinquents who show signs of similar endrocrine disturbances. Certain of the latter may be corrected by suitable endocrine therapy. Every criminal should be examined for the presence of signs of endocrine disturbance. Any abnormalities found should be treated. For this purpose the fixed sentence should be abolished, and an indeterminate detention substituted. But prevention is better than attempts at cure, and a periodic survey of the endocrine glands should be made in every child. M. HAMBLIN SMITH.

The Danger in Our Midst: Crime and Abnormality. (*Howard Journ., vol. iii,* 1932.) *Good, T. S.*

This paper is based upon observations made at the Mental Deficiency Department of the City of Oxford, the out-patient clinic at the Radcliffe Infirmary, and a recently established child-guidance clinic. The author's main conclusions are as follows: The mental defective is more prone to criminal conduct than other types of abnormality, but his crimes are usually of a petty nature. The higher-grade cases may be tools in the hands of more intelligent criminals. The group designated "moral imbeciles" probably supplies a large percentage of criminals; this group may contain some supernormal intelligences. There is a group which resorts to crime because social environment does not provide sufficient outlet for emotional energy; in this class we have the psychoneurotic criminal. There is not sufficient evidence to show whether the treatment of the non-defective criminal child acts as a preventive of criminality in after life. M. HAMBLIN SMITH.

Penal Methods of the Future. (*Howard Journ., vol. iii,* 1932.) *Heard, G.*

The criminal is largely a symptom of society's condition, and much criminality can be cured by social changes. A sane community would see that a sense of social responsibility was built up, and that the socially irresponsible were kept where they could not damage themselves or the community. The rulers of society should be debarred from all private interests, and care must be taken that they are not overworked. We expect far too much of the few who are willing and able to serve the State. M. HAMBLIN SMITH.

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Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Quarterly Meeting.

The Autumn Quarterly Meeting of the Association was held at 11, Chandos Street, Cavendish Square, on Tuesday, November 22, 1932, the President, Dr. R. B. Campbell, F.R.C.P.E., *J.P.*, occupying the chair.

The minutes of the previous meeting, having been printed in the Journal, were taken as read and approved.

Obituary.

The President said his next duty was a very sad one, to announce the deaths of four members of the Association who had passed away since the Annual Meeting in July—Dr. George Rae Gibson, *D.S.O.*, Dr. W. F. Blandford, Dr. George Stevens Pope, and Dr. James Humphry Skeen—and he asked Dr. T. C. MacKenzie, Dr. Donald Ross, and Dr. Rice to say a few words regarding them.

Dr. T. C. Mackenzie said that his circumstances had recently been such that he had had the opportunity of seeing something of the late Dr. Gibson's work as Deputy-Commissioner of the General Board of Control for Scotland. He, the speaker, had recently been in the Outer Islands of Scotland and through Skye, and in various other portions of the Highlands, doing work which Dr. Gibson had been doing for many years; and it would gratify members of the Association to know of the testimony to the character of the deceased which he gleaned in many places from people in humble homes to whom he was known, and of the very great regret that was caused by the news of his death. By the general public, as well as by those engaged in this specialty, his work was very highly appreciated and his personality very highly esteemed.

Dr. Donald Ross said that before speaking, as he had been asked to do, of Dr. Skeen, he would like to add his word of tribute concerning the late Dr. George Gibson, who was a great friend to all in the specialty in Scotland. He himself enjoyed a very close friendship with Dr. Gibson, and he felt that gentleman's dramatically sudden death most acutely.

Dr. Gibson had a very distinguished career. In the Argyll and Sutherland Highlanders he served through the Boer War, and it was a matter of great pride to him that he had done so. He was also in Canada, and rose to great power in the Canadian Forces, in which he was a leading man. He was son of the late George Gibson, who was one of the best teachers in Edinburgh University. Evidently the father's mantle fell on the son in the matter of versatility and in other respects. The College of Physicians in Edinburgh, in recent years, had him as its Secretary, and he proved a most efficient holder of the post. Those members who were at the combined meeting of this Association and the British Medical Association in Edinburgh in 1927 might not all be aware that all the "spade-work" of that meeting was done by Dr. Gibson. Dr. Gibson was also a very fine poet, though very little of what he wrote in this way had seen the light. Like Dr. Mackenzie, he, the speaker, was recently in Mull, and everybody he met spoke with tremendous feeling of Dr. Gibson. One of the speakers said that Gibson was a man of unique stamp, and in his death it was felt that a certain mould of man had been snatched away.

With regard to the death of Dr. Skeen, that sad event had taken place on the previous Friday. He passed away suddenly, after doing his morning's work. Some of the members now present knew Dr. Skeen's work better than the speaker did. He graduated in Aberdeen

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in 1890, and started mental work as assistant to Sir John Macpherson at Larbert; he succeeded Dr. Campbell Clarke at Bothwell, and was then Medical Superintendent at Cupar (Fife). He took, in succession to Dr. Rutherford Macphail, the post of superintendent of the only private mental hospital in Scotland. Dr. Skeen enjoyed life immensely, and followed many pursuits and hobbies. He was a most genial friend and a warm-hearted host.

Dr. RICE said he felt it a privilege to have been asked to say something concerning their late member Dr. George Stevens Pope. It was true that Dr. Pope was not one of the most active members of the Association at its meetings, but he had never come across a man with an abler brain, or one who was more versatile or more widely read. After taking his Scottish qualifications he turned his attention to mental medicine, and served at the Retreat at York, and at Cane Hill. He opened the Middlesbrough Asylum as its first superintendent. Later he moved to the Somerset Mental Hospital at Wells, and while there he effected many improvements of an important character, both structural and administrative. He retired as soon as he reached the retiring age, and joined his friend Gordon Munn in running a licensed house at Norwich, where, again, he brought about many improvements, and devoted himself to the care of his patients in a very sympathetic way. Being a man of tireless energy and always willing to work, he turned his attention to municipal politics, entering the Norwich Council as a Conservative after a contest in a strong working-class constituency, and one which previously had been represented by a Labour councillor for many years. After he had been on that Council only two years he was unanimously elected Lord Mayor of Norwich City, and the speaker thought that this Lord Mayoralty would remain in the memory of citizens for a long time. Afterwards he was Chairman of the Public Health Committee of the Corporation, and about two years ago he was elected Leader of the Conservative Party there. He, Dr. Rice, had never come across a readier or a wittier speaker than Dr. Pope; whatever was the subject, Dr. Pope was always ready to give some illuminating remarks of his own. He was a fighter, and could bring forward most biting sarcasm and cynical comments, but they were always tinged with a humour which took the sting out of them. It was a striking tribute to him that though it was announced that only his most intimate friends were invited to be present at the funeral, several hundreds of people were there, and several hundreds more attended at the Cathedral, where the service was conducted with full municipal honours.

The resolution of sorrow and condolence with the surviving relatives was carried by members rising in their places.

COUNCIL'S BUSINESS.

The PRESIDENT stated that the Council had met that morning and dealt with several important matters. A decision had been arrived at regarding the question of appointing Trustees for the Gaskell Fund in place of those who had died during recent years. As a result of taking legal advice it was found necessary to appoint additional Trustees, and in view of the expense involved in making alterations of this kind, the Council thought it would be advisable to increase the number of Trustees to seven, and nominated four of the younger members who it was hoped would be spared to act in the capacity of Trustees for many years. The four names decided upon were: Dr. Ross, Dr. Bower, Dr. Skottowe, and Dr. Macfarlane.

With regard to the special prize for Nurses which was being instituted in memory of the late Dr. Campbell Clarke, it was decided that the regulations in connection with this award should be drawn up by Dr. Ross and the Honorary Treasurer.

Another matter which the Council had under consideration was that of the Association's accommodation. It was generally agreed that they were most comfortable at Chandos Street, but the Council felt—now that the Library was suitably housed and on a sound footing under the supervision of Dr. Whitwell—that the arrangement of using the same room as Library and as the Secretary's office was inconvenient, and that it would be a great advantage to have a separate room where the Association's records and documents could be kept. An additional small room was available for this purpose, and the Council unanimously agreed to acquire it as a Secretary's office. This arrangement would enable Members to have full use of the Library in quietness.

Miss Higgins, who had recently been appointed Secretary, was present in this capacity for the first time that day, and he would like to take the opportunity to assure her that she would receive every assistance from the Members of the Association in connection with her work.

The PRESIDENT then announced that Dr. Adolf Meyer had agreed to deliver the Fourteenth Maudsley Lecture in May, 1933.

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Election of New Members.

The President nominated Dr. Ross and Dr. Mackenzie as scrutineers for the ballot, which was taken for all the candidates *en bloc*:

Chalmers, Edith, M.B., Ch.B.Glasg., Assistant Medical Officer, Chiswick House, Pinner, Middlesex.
Proposed by Drs. D. I. O. Macaulay, W. J. Coyne and G. W. Smith.

Hull, Eric Randal, M.B., B.Ch., B.A.O.Hons., Second Senior Assistant Medical Officer, County Mental Hospital, Lancaster.
Proposed by Drs. G. R. Wadsworth, J. D. Silverston and C. J. Thomas.

Beccle, Harold Charles, M.B., B.S., M.R.C.P.Lond., D.P.M., Assistant Medical Officer, Kent County Mental Hospital, Maidstone.
Proposed by Drs. W. E. Collier, R. M. Macfarlane and R. Worth.

Sanders, Marjorie Elizabeth Frances, M.B., Ch.B.Edin., D.P.M., Assistant Medical Officer, Long Grove Mental Hospital, Epsom.
Proposed by Drs. David Ogilvy, A. Walk and Joyce McConnell.

Hingston, Cicely Lamorna, M.R.C.S., L.R.C.P., *M.B.F.*(*Mil.*), Hon. Visiting Physician, Lady Chichester Hospital, Hove; 9, The Drive, Hove, Sussex.
Proposed by Drs. A. Helen Boyle, W. F. Menzies and E. A. Chennell.

Galloway, James Forbes, M.D.Liverp., D.P.H., Assistant Medical Officer, Ewell Mental Hospital, Epsom, Surrey.
Proposed by Drs. L. H. Wootton, R. W. Armstrong and F. G. L. Barnes.

Bates, Ralph Marshall, F.R.C.S.Eng., L.R.C.P.Lond., Resident Medical Officer, Stoke Park Colony; Parrdown House, Stapleton, Bristol.
Proposed by Drs. G. de M. Rudolf, Richard J. A. Berry and R. Worth.

The President announced that all the candidates had been elected.

The Maudsley Lecture.

The Thirteenth Maudsley Lecture was delivered in the Barnes Hall of the Royal Society of Medicine by Sir E. Farquhar Buzzard, *K.C.V.O.*, M.D., F.R.C.P., Regius Professor of Medicine, Oxford University, on the subject of "Education in Medicine" (*vide* p. 4).

Dr. W. G. Masefield said he felt that those who had been listening to this lecture must consider themselves to be very lucky; but he thought it was his duty to point out that this was the thirteenth lecture in the series of Maudsley Lectures, and hence there must be an element of ill-luck about it. That element came in from the fact that it was he who had been asked to express the Association's thanks to Sir Farquhar for his eloquence. Why he had been asked he did not know. He wondered whether the powers that be in the Association imagined—erroneously, of course—that his, the speaker's name carried with it some gift of poetic inspiration or of dramatic utterance. He could picture quite well his eminent kinsman from the heights of Boar's Hill reciting a narrative poem in praise of the wonderful flights, the unerring aim and the poise of the buzzard. He regretted, however, that the Muse had passed him by, and so he must voice the feelings of those present in mere halting prose.

Sir Farquhar had been a member of this Association for eleven years, but he had been seen at the meetings far too seldom. Those, however, who had the good fortune to be present at the memorable annual meeting of 1930, at Oxford, knew that Sir Farquhar played a large part in securing the wonderful success of the event. Among other things members would remember his felicitous after-dinner speech, and Lady Buzzard's and his own hospitality among the lovely surroundings of Magdalen College.

And now, this afternoon, for all time, Sir Farquhar had made members indebted to him for this brilliant and stimulating lecture. Who could have been better suited than Sir Farquhar to give this authoritative dissertation on the subject of "Education in Medicine", considering that he directed medical study in the oldest University in this country, and was a distinguished member of that august and terrifying body, the General Medical Council?

He believed that everyone present would agree with him that Sir Farquhar had done the Association honour this afternoon. He was certain that Sir Farquhar's name would add lustre and distinction to that already distinguished array of Maudsley Lecturers, and it was the speaker's privilege and great pleasure, on behalf of the members of the Association, to propose that Sir Farquhar Buzzard be given their warmest thanks. (Applause.)

Dr. T. Saxty Good, in seconding the proposal, said that the proposer had related the good qualities of Sir Farquhar, but he did not tell the meeting that that gentleman had been one of

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the first men in Oxford to consider their branch of medicine, namely, the psychological side; it was through the influence of Sir Farquhar that this branch of medicine had been recognized at Oxford. He was a great neurologist, and some of those present might remember that the psychiatrist and the neurologist thought along different lines, and occasionally dealt each other buffets. But to-day the Association was entertaining a neurologist who never buffeted the psychiatrist, but on the contrary, helped and co-operated with him.

He did not know that there was much in names, but he believed there was a bird of the same name which had remarkably long vision, and he did not think the lecturer's surname belied itself in that respect. He could see further than others because he had a more highly developed vision.

He had the greatest pleasure in seconding the vote. (Applause.)

The vote of thanks was carried by acclamation.

SOUTH-EASTERN DIVISION.

THE AUTUMN MEETING of the South-Eastern Division of the Royal Medico-Psychological Association was held by courtesy of the Governing Body and of Dr. Gilmour at the Woodside Hospital, Woodside Avenue, London, N. 10, on Wednesday, September 28, 1932.

The following members were present: Sir Robert Armstrong-Jones, Sir Hubert Bond, Drs. R. Percy Smith, Henry Yellowlees, W. J. T. Kimber, Reuben Levinson, Marjorie E. Franklin, Cedric W. Bower, W. Brooks Keith, Daniel F. Rambaut, May Edith Martin, Hubert J. Norman, W. Gordon Masefield, A. Edward Evans, S. Edgar Martin, Douglas I. O. Macaulay, Nora Crow, F. H. Guppy, A. Shepherd, H. G. L. Haynes, W. McCarten, G. W. Smith, Nathan Raw, C. K. Bushe, A. A. W. Petrie, W. Robinson, R. M. Stewart, D. S. Spence, W. J. Coyne, A. C. Sinclair, N. H. Oliver, R. M. Macfarlane.

During the forenoon, members and their guests inspected the hospital and grounds and were afterwards entertained to lunch.

The meeting followed.

The minutes of the last meeting were taken as read, and confirmed.

The fixing of the date and place of the Spring Meeting was left to the Divisional Secretary.

Dr. GILMOUR then read a most interesting and instructive paper entitled "The Origin, Objects and Development of Woodside Hospital", and a discussion followed.

Members and their guests were then entertained to tea.

SOUTH-WESTERN DIVISION.

THE AUTUMN MEETING of the Division was held, by kind invitation of Dr. J. R. Benson, at Laverstock House, near Salisbury, on Thursday, October 27, 1932.

The following members were present: Drs. B. M. Mules, E. Casson, A. S. Mules, A. C. King-Turner, J. L. Jackson, J. P. Westrup, W. S. J. Shaw, J. W. Leech, J. M. Rutherford, T. M. C. Speer, J. G. Smith, P. Lornie, S. J. Gilfillan, R. D. Gillespie, J. D. Thomas, H. W. Hills, R. C. Monnington, N. R. Phillips and S. Edgar Martin.

Drs. A. H. Watson, C. J. King-Turner, A. H. Luckham, E. T. Fison, P. W. Carruthers, P. M. Brett and J. R. P. Phillips attended as visitors.

It was proposed by Dr. B. M. MULES and seconded by Dr. J. L. JACKSON that Dr. N. R. Phillips take the Chair.

Dr. N. R. PHILLIPS regretted that owing to sudden illness Dr. E. Barton White was unable to attend the meeting and take the Chair. He was sure that the members would like the Hon. Secretary to write expressing the sympathy of those present and the hope that he would soon be better.

The minutes of the last meeting were read and confirmed.

Dr. S. E. Martin was nominated as Hon. Divisional Secretary.

Dr. E. Barton White and Dr. J. L. Jackson were nominated as Representative Members of Council, and Dr. J. L. Jackson as Chairman of the Division.

Dr. A. A. D. Townsend was nominated to serve on the Mental Nursing Advisory Committee to the General Nursing Council.

The HON. SECRETARY reported that he had received an invitation from Dr. S. J. Gilfillan

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for the Spring, 1933, Meeting to be held at Bailbrook House, Bath, and this was gratefully accepted.

Dr. R. D. GILLESPIE then read a most interesting and instructive paper on **"Psychiatry in a General Hospital"**. Drs. JACKSON, LEECH, LUCKHAM and MONNINGTON took part in the subsequent discussion, and Dr. GILLESPIE replied.

The CHAIRMAN proposed, and Dr. J. L. JACKSON seconded, that a vote of thanks be accorded to Dr. R. D. Gillespie for his kindness in coming from town to deliver his lecture.

During the morning members were shown over the hospital and grounds.

The members were kindly entertained to lunch and tea, and a hearty vote of thanks was accorded to Dr. J. R. Benson for his most generous hospitality. In his reply Dr. Benson referred to the fact that Laverstock House was the oldest place in England for the treatment of those suffering from mental diseases, and he also mentioned that he was unable to show the members any means of mechanical restraint, as this form of treatment had never been used in Laverstock House since its inception several hundred years ago.

NORTHERN AND MIDLAND DIVISION.

THE AUTUMN MEETING of the Division was held at Rubery Hill Mental Hospital, by the kind invitation of Dr. T. C. Graves, on Thursday, October 27, 1932.

During the forenoon members visited the wards, laboratories, treatment rooms and radiographic department, and the new convalescent bungalows.

Members and visitors were entertained to lunch by Dr. Graves. A vote of thanks to Dr. Graves for his hospitality, proposed by Dr. B. H. Shaw, was carried by acclamation, and Dr. Graves briefly responded.

Dr. Shaw took the chair at 2.30. The minutes of the previous meeting, having been published and circulated, were confirmed and signed.

Apologies for absence from 34 members were communicated.

The following 42 members attended (this being the largest attendance recorded at a Northern and Midland Divisional Meeting during the past thirty years): Drs. Auden, Bain, Brunton, Clegg, Dove Cormac, Drury, Erskine, Eurich, Fenton, Fleming, Forrester, Forsyth, Graves, Healey, Hopkins, Ladell, Mackenzie, D. Macmillan, D. M. Macmillan, McCowan, McGlashan, Norris, O'Connell, O'Reilly, Parfitt, Pearce, Pickworth, Potts, Rambaut, Russell, Selkirk, Shaw, Shilvock, Sykes, Smith, Steel, Stephens, Strecker, Thorpe, Wilkins, Wilson, and Whitelaw.

More than twenty visitors also attended, including Dr. Matthew Burn (Public Health Department), and Drs. Aldridge, Alabaster, and Yoxall.

The following candidates were balloted for and duly elected ordinary members of the Association:

WILLIAM HARKINS, M.A., M.B., Ch.B.Aberd., Assistant Medical Officer, West Riding Mental Hospital, Storthes Hall, Kirkburton, near Huddersfield.
Proposed by Drs. Ewing, Bruce and Russell.

WILLIAM JOHN MCCULLEY, B.Sc., M.B., Ch.B., D.P.M., Second Assistant Medical Officer, City Mental Hospital, Mapperley Hill, Nottingham.
Proposed by Drs. Brunton, Macmillan and Russell.

FRANK EDWIN NORRIS, M.R.C.S., L.R.C.P.Lond., Assistant Medical Officer, The Coppice, Nottingham.
Proposed by Drs. Hunter, Brunton and Russell.

The following were elected to serve on the Divisional Committee of Management: Dr. Edgerley, Dr. Dove Cormac and Dr. Archdale.

The SECRETARY reported that provisional arrangements had been made to hold the Spring Meeting for 1933 at Stafford County Mental Hospital, and the Autumn Meeting at Derby County Mental Hospital, Mickleover.

Dr. J. M. MACKENZIE described a case of absence of the left restiform body, resulting probably from intracranial birth injury, and accompanied by abnormal mental symptoms (*vide* p. 167).

Dr. F. A. PICKWORTH gave a lecture on the occurrence of septic processes in the sphenoidal sinuses, and illustrated his views by means of a large number of beautifully prepared specimens.

Dr. W. A. POTTS read a paper entitled **"Sterilization in Relation to Mental Deficiency."** He was of opinion that sterilization was justifiable for the purpose of controlling the families of a large number of degenerate parents who were known to be incapable of producing mentally normal offspring. He would not suggest, however, that sterilization would render segregation

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measures unnecessary. In support of his views Dr. Potts produced a number of family records and other statistics.

Dr. HAMBLIN SMITH demonstrated two performance tests, *viz.*, Alexander's passalong test, and Heilbronner's apperception test.

In a striking series of photographs, reflected on the screen by the epidiascope, Dr. GRAVES showed the remarkable progress of a large number of patients, following treatment by means of sinus irrigations, in the manner fully described in the recently published Monograph Number of the Journal.

Dr. KATHLEEN A. H. SYKES read a paper on "The Routine Investigation and Treatment of Cases Admitted to Rubery Hill Mental Hospital" (see below).

At the close of the meeting, at 5 p.m., the Secretary proposed a vote of thanks to Dr. Graves and his colleagues for the most interesting and instructive papers and demonstrations which had been given. This was carried by acclamation.

The members and visitors were then kindly entertained to tea.

PAPER.—"The Routine Investigation and Treatment of Cases Admitted to Rubery Hill Mental Hospital," by KATHLEEN A. H. SYKES, M.D., D.P.M.

THIS scheme of investigation has been evolved as a result of dealing with a large number of cases over many years, and aims at ensuring to each case an exhaustive physical as well as mental examination. It is found in practice that some such ordered plan is necessary to unearth the often hidden foci of infection which underlie so much mental and physical ill-health.

On admission the patient is put to bed and observed for at least a week, generally longer. The temperature and pulse-rate are recorded four-hourly to begin with, later morning and evening. This is a period of rest, apart from the routine examination that takes place on admission and the complete examination and prolonged interview a few days after. A personal and family history is obtained from the patient and relatives. Then a sample of blood is withdrawn by venupuncture. This is tested not only for its response to the Wassermann and ordinary Widal reaction, but also for its agglutinating power against less common abnormal intestinal inhabitants, such as *B. Aertrycke, Gaertner, Shiga, melitensis* and so forth. If the response is positive the fæces are examined, and the blood test repeated, until it is determined whether the infection is recent or chronic, or whether the case is a "carrier". If the Wassermann reaction is positive a lumbar puncture is done, and the cerebro-spinal fluid is sent with a further specimen of blood for a complete report.

Then all cases are seen by the visiting specialists, dental and ear, nose and throat: women are also examined by the gynæcologist; while many, particularly post-encephalitics, epileptics, general paralytics, patients with any doubtful neurological sign or with visual hallucinations, appear before the ophthalmologist. The aid of the X-ray Department is called in when necessary, particularly in connection with the dental work—to localize buried stumps or dental cysts, or unerupted teeth or impacted molars, or to give information as to the general condition of roots and alveoli. It may also throw light on abdominal conditions by demonstrating renal calculi and gall-stones.

When the investigation is completed, treatment is considered. This is planned (on the basis of the specialists' reports) by the medical officer in charge of the case, and is most carefully arranged, having regard to the patient's physical state and probable response. Treatment cannot be rushed; it must be carried out in stages, and often a prolonged interval may be required between each stage. Dental treatment is commonly needed; this may be done first, and thus an obvious source of infection removed with little shock to the patient. An anæsthetic may be required, and nitrous oxide, ethyl chloride, ethyl chloride followed by ether, or chloroform and ether maintained by ether given through the Shipway apparatus, are all used here. Generally speaking, I have found, after an experience of some hundreds of anæsthetics given in mental cases, that patients with mania and general paralysis give little cause for concern; that cases with melancholia are difficult to induce, as they will not breathe deeply, but may be helped by giving them carbon dioxide gas; that epileptics usually have fits on recovering from the anæsthetic; and that post-encephalitics and cases of primary dementia are the most difficult of all. This may be an indication of their profoundly toxic state. They have periods of apnœa, and often their pulse weakens unaccountably. The most reliable guide is the blood-pressure, which I always take the day before giving an anæsthetic—a systolic pressure below 110 or above 180 is a contra-indication unless the operation is one necessary for the preservation of life, in which case the risk must be taken. The three cases which have given me serious anxiety have all had systolic pressures outside these limits. When the patient has been relieved of his infected teeth or stumps he rests in bed for a time, and then there commendation, if any, of the ear, nose

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and throat surgeon is considered. This may be for removal of tonsils (which is done by blunt dissection) and/or exploration of the sinuses by the Watson-Williams technique, followed by intranasal drainage if infection is found. This necessitates a general anæsthetic, and it is to be remembered that there is a danger-point when traction is being made on tonsils or tonsil bed, as this always affects the pulse and respiration adversely. If the patient will co-operate in treatment to the extent of lying still, and exploration of antra is all that is required, this can be done quickly and easily under a local anæsthetic.

After the ear, nose and throat treatment the patient rests in bed for a further period, and then the question of stimulating his resistance with some form of non-specific therapy arises. Here the choice is usually between a course of aqueous colloidal sulphur (Crookes' colsul), five intramuscular injections given at 48-hourly intervals and rising from 1–5 c.c., or mixed typhoid—para-A and B vaccine (Burroughs Wellcome), given intramuscularly or intravenously, varying with the patient, but sometimes rising to 5 c.c. given intravenously. A pyrexial response of between 103° and 105° is aimed at, if the patient is in good physical condition.

In the meantime other methods of treatment will have been carried out. A large proportion of female patients are found to have uterine endocervicitis; sometimes this is a result of parturient tears, though it also occurs in young unmarried nulliparæ, and in them is rarely gonorrhœal. This endocervicitis responds in the most satisfactory manner to cauterization followed by antiseptic douches.

Again, many patients are found to have chronically infected colons, and muco-pus or pus in quantities is washed away and the condition greatly improved by a course of continuous colonic lavage administered on one of the special tables in use here.

A course of ultra-violet light treatment is often found useful in patients who have been relieved of their sources of gross toxæmia and are approaching convalescence, though it must be used with care and discrimination, particularly in cases with a high blood-pressure.

The scheme of treatment for general paralytics is the same as already outlined, with the addition of a course of tryparsamide, frequent lumbar punctures, malaria, if they are considered well enough, or an extended course of colsul if not.

Medicinal treatment may be palliative, sedative, antiseptic or specific. Sedatives are kept at a minimum and morphine is rarely given, except that a nervous subject may have a quarter of a grain as a preparation for lumbar puncture. Restless old people take kindly to small doses of nepenthe, while epileptics may be benefited by collosol bromide, which seems to be tolerated better than the other preparations. Cases showing evidence of streptococcal infection, including puerperal, may be given courses of antiscarlatinal serum.

SCOTTISH DIVISION.

THE SPRING MEETING of the Scottish Division was held at Glengall Hospital, Ayr, on Thursday, May 12, 1932.

The following members were present: Drs. C. C. Easterbrook, R. D. Hotchkis, Neil T. Kerr, T. C. Mackenzie, D. J. Forbes, J. H. Macdonald, J. R. Robb, G. M. Bell, C. A. Crichlow, W. Boyd, Ronald Stewart, T. R. C. Spence, John McDougall, Donald Ross, C. J. Shaw, R. B. Campbell, Alex. Dick, C. G. A. Chislett, A. M. Dryden, Douglas McRae and W. M. Buchanan.

Dr. Douglas McRae, Divisional Chairman, presided.

Before taking up the ordinary business of the meeting the CHAIRMAN feelingly referred to the death of Prof. George M. Robertson, one of the oldest and most active members of the Division, whose personality for years had dominated the whole field of psychological medicine in Scotland, and whose pioneer efforts to improve the conditions of treatment of patients and the training of medical students and nurses had brought him an international reputation. Tributes to Prof. Robertson's memory were also paid by Drs. DONALD ROSS, R. B. CAMPBELL and T. R. C. SPENCE. They referred to his fine personal qualities, his genial disposition, his charm as a host, his courtesy in controversy, and his vision and foresight which made his judgment so valuable in matters of policy. It was unanimously resolved to record in the minutes that the members of the Scottish Division of the Royal Medico-Psychological Association express their deep sense of the loss sustained by the death of Prof. George M. Robertson, and their sympathy with the members of his family in their bereavement. The Secretary was instructed to send an excerpt of the minute to Mr. Fred. Robertson.

Reference was also made to the recent tragic bereavement sustained by Dr. David Yellowlees, and the Secretary was instructed to convey to him the sympathy of the members of the Division.

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The minutes of last meeting were read, approved and signed by the Chairman.

Apologies for absence were intimated from Drs. R. Dods Brown, J. H. Skeen, W. D. Chambers, A. McNiven, Geo. R. Gibson, P. Steele, J. H. C. Orr, H. Carre, D. K. Henderson and Sir Arthur Rose.

The SECRETARY submitted letters of acknowledgment from Mrs. Carswell and Mrs. Macphail thanking the Division for its kind letters of sympathy.

Drs. J. H. Macdonald and C. J. Shaw were unanimously elected Representative Members of Council for the year 1932–1933, and Dr. W. M. Buchanan was unanimously elected Divisional Secretary.

Dr. J. H. Macdonald was unanimously elected Chairman of the Division.

The following were unanimously nominated as members of the Mental Nursing Advisory Committee to the General Nursing Council: Drs. Douglas McRae, T. C. Mackenzie, R. D. Hotchkis, Donald Ross and W. M. Buchanan.

The Divisional Committee of Management was appointed, consisting of the Nominated Member of Council, the two Representative Members of Council, the Divisional Secretary and Dr. T. R. C. Spence.

The following candidates, after ballot, were unanimously admitted ordinary members of the Association:

JAMES BLACK METHVEN, M.B., Ch.B.Edin., Senior Assistant Medical Officer, Fife District Asylum, Cupar.

Proposed by Drs. Wm. Boyd, Neil T. Kerr and W. M. Buchanan.

WILLIAM MUIRHEAD REID, L.R.C.P., L.R.C.S.Edin., L.R.F.P.S.Glas., D.P.H., Second Assistant Physician, Royal Mental Hospital, Aberdeen.

Proposed by Drs. R. Dods Brown, Alex. Craig and W. M. Buchanan.

WILLIAM ROBERT LOGAN, M.B., Ch.B., Third Assistant Physician, Royal Mental Hospital, Aberdeen.

Proposed by Drs. R. Dods Brown, Alex. Craig and W. M. Buchanan.

Dr. R. B. CAMPBELL, President-Elect, outlined the arrangements he was making in connection with the forthcoming Annual Meeting of the Association at Stirling.

Dr. C. C. EASTERBROOK moved that the Scottish Division entertain members and guests attending the Annual Meeting to a motor trip through the Central Highlands on Saturday, July 16, and the Secretary was instructed to make all necessary arrangements.

Members were entertained to lunch by Dr. McRae, who was cordially thanked for his hospitality, and for the arrangements he and his staff had made in connection with the meeting.

After lunch members were conducted through the hospital and shown several cases of clinical interest. Dr. McRae's running commentary on matters structural, administrative and therapeutic, characterized by originality and humour, was greatly enjoyed by all.

Members were then entertained to tea by Dr. and Mrs. McRae at Glengall House.

THE AUTUMN MEETING of the Scottish Division was held at Bangour Mental Hospital, Broxburn, West Lothian, on Friday, October 28, 1932.

There were present: Drs. Ronald Stewart, W. M. Ford Robertson, W. R. D. Fairbairn, E. H. Connell, R. D. Hotchkis, A. Macniven, W. Boyd, C. D. Bruce, R. B. Campbell, C. A. Crichlow, W. N. J. Chapman, Donald Ross, R. Dods Brown, A. M. Dryden, Neil T. Kerr, W. D. Chambers, John R. Robb, W. M. Ogilvie, Thos. Dymock, John McDougall, R. G. McInnes, Wm. J. Raitt, T. R. C. Spence, T. F. Rodger, A. M. Macgowan, C. P. H. Hunter, Kate Fraser, W. McAlister, J. H. Macdonald, Douglas McRae, R. Mary Barclay, Reginald Bailey and W. M. Buchanan.

Dr. DOUGLAS MCRAE presided at the outset, and after expressing his thanks to the officials of the Division for their help during his term of office, introduced his successor as Chairman of the Division—Dr. J. H. Macdonald—who thereafter presided.

Before taking up the ordinary business of the meeting the CHAIRMAN feelingly referred to the death of Dr. George Herbert Rae Gibson, D.S.O., Deputy Commissioner of the General Board of Control for Scotland. Dr. Gibson, he said, had done valuable work in connection with boarded-out patients, had given devoted and loyal service to the Royal College of Physicians as Secretary and Registrar, and had distinguished himself as a very gallant soldier. Drs. DONALD ROSS and W. MCALISTER also paid tribute to Dr. Gibson's memory, and spoke of his outstanding social gifts, his genial companionship, humour, and unvarying optimism, which endeared him to all. It was unanimously resolved that it be recorded in the minutes, that the members of the Scottish Division of the Royal Medico-Psychological Association desire to express their deep sense of the loss sustained by the death of Dr. George H. R. Gibson, and their sympathy with the members of his family in their bereavement, and the Secretary was instructed to send an excerpt of the minute to Mrs. Gibson.

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The CHAIRMAN voiced the members' sympathy with the President and Mrs. Campbell and their family following the serious accident to their second son soon after the Annual Meeting at Stirling, and the gratification all felt that his recovery was so complete that he had now resumed his medical studies.

The minutes of last meeting were read, approved and signed by the Chairman.

Apologies for absence were intimated from Sir Arthur Rose, Prof. D. K. Henderson and Drs. A. Dick, T. C. Mackenzie, J. H. C. Orr, D. J. Forbes, C. J. Shaw, C. C. Easterbrook, J. H. Skeen and Patrick Steele.

The SECRETARY submitted letters of acknowledgment from Mr. F. G. R. Robertson and Dr. David Yellowlees thanking the Division for its kind letters of sympathy.

The following candidates, after ballot, were unanimously admitted as ordinary members of the Association:

WILLIAM BLYTH, M.B., Ch.B., Assistant Medical Officer, Riccartsbar Mental Hospital, Paisley.

Proposed by Drs. Mary R. Knight, Neil T. Kerr and Wm. M. Buchanan.

DOUGLAS CAMPBELL DEWAR, L.R.C.P.&S.E., L.R.F.P.S.G., D.P.M.Lond., Assistant Medical Officer, Renfrew District Asylum, Paisley.

Proposed by Drs. R. D. Hotchkis, Neil T. Kerr and Wm. M. Buchanan.

CHARLES DAVID BRUCE, M.B., Ch.B.Edin., Dipl. Psych. Ed., Medical Superintendent, Criminal Lunatic Department, and State Institution for Defectives, Perth.

Proposed by Drs. W. McAlister, C. A. Crichlow and Wm. M. Buchanan.

THOMAS DYMOCK, M.B., Ch.B.Glas., Second Assistant Medical Officer, Edinburgh District Mental Hospital, Bangour, West Lothian.

Proposed by Drs. W. McAlister, C. A. Crichlow and Wm. M. Buchanan.

ARCHIBALD MENZIES, L.R.C.P.&S.E., L.R.F.P.S.G., Senior Resident Medical Officer, Hawkhead Mental Hospital, Glasgow.

Proposed by Drs. J. H. Macdonald, A. A. Bell and Wm. M. Buchanan.

ROBERT GOW MCINNES, L.R.C.P.&S.E., M.R.C.P.E., Senior Assistant Physician, Royal Edinburgh Hospital for Mental Disorders; Physician, Jordanburn Hospital; West House, Morningside, Edinburgh.

Proposed by Prof. D. K. Henderson, and Drs. T. R. C. Spence and Wm. M. Buchanan.

After explanations by the Chairman and Secretary of the constitution and activities of the Scottish Association for Mental Welfare, Dr. MCALISTER moved "that the Division approach the Council of the Royal Medico-Psychological Association for sanction to support the Scottish Association for Mental Welfare by annually subscribing to its funds as an affiliated body, and by electing official representatives to its Executive Council". The President seconded. Dr. DOUGLAS MCRAE moved a direct negative, which was seconded by Dr. R. MARY BARCLAY. On a vote only two members supported the negative, and the Chairman declared Dr. McAlister's motion carried. The Secretary was instructed to take the necessary steps.

Members were then conducted over representative portions of the hospital by Dr. McAlister and his assistants. Visits were paid to the Male Reception Hospital, the Sanatorium—a large villa with 180 beds for senile patients—the Special Treatment Department, where X-ray, dental and similar work is done, and the recently dedicated church, where members had an opportunity of hearing the organ.

Members were kindly entertained to lunch in the hospital, after which Councillor Mrs. SOMERVILLE, Convener of the Mental Health Services Committee of the Corporation of Edinburgh, welcomed the Division to Bangour, and the CHAIRMAN and the PRESIDENT thanked the Committee and Dr. McAlister and his staff for their kind hospitality, and for the arrangements made in connection with the meeting.

On the meeting reassembling, Dr. W. R. D. FAIRBAIRN, Lecturer in Psychology, Edinburgh University, read a paper entitled **"The Role of the Aggressive Instinct in Manic-Depressive Insanity and Allied Conditions"**. An excellent discussion followed, contributed to by Drs. CONNELL, MCNIVEN, ROSS, ROGERS, CHAMBERS and the CHAIRMAN. Dr. FAIRBAIRN briefly replied to the points raised.

Members were thereafter kindly entertained to tea by Dr. and Mrs. McAlister.

IRISH DIVISION.

THE AUTUMN QUARTERLY AND CLINICAL MEETING of the Irish Division was held in the Royal College of Physicians, Kildare Street, Dublin, by kind permission of the President and Fellows, on Thursday, November 3, 1932.

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The following members were present: Dr. J. O'Conor Donelan, in the Chair, Drs. Dore E. Allman, S. Blake, Catherine Carey, Kathleen Dillon, Nora May FitzGerald, John FitzGerald, Dorothy Gardner, Norman Graham, G. J. Harrison, B. Honan, R. R. Leeper, J. C. Martin, P. Moran, John Mills, Eveleen O'Brien, R. Taylor, F. O'C. Walsh, R. Thompson (Hon. Sec.).

Apologies for unavoidable absence were received from the President (Dr. Campbell), Dr. M. J. Nolan, Dr. G. H. Keene and Dr. R. H. Taylor.

The minutes of the previous meeting were read, approved and signed by the Chairman.

The following nominated candidate was, after ballot, unanimously elected a member of the Association:

PATRICK J. COURTNEY, M.D. (N.U.I.), Assistant Medical Officer, Donegal District Mental Hospital, Letterkenny.

Proposed by Drs. J. C. Martin, R. R. Leeper and John FitzGerald.

The meeting accepted, with pleasure, Dr. Leeper's invitation to hold the Spring Meeting at St. Patrick's Hospital, Dublin, on April 6, 1933, and Dr. Martin's invitation to hold the Summer Meeting at Donegal District Mental Hospital, Letterkenny, in July, 1933.

Dr. DONELAN then introduced the question of the setting up of a Central Laboratory for the furtherance of research in Mental and Nervous Diseases, and, following a discussion, the following resolution was proposed by Dr. MILLS, seconded by Dr. MARTIN, and carried:

"That this Division is convinced that the provision of a Central Pathological Laboratory specially devoted to Research in Nervous and Mental Diseases is most desirable."

The Secretary was directed to forward copies of this resolution to the Medical Superintendents of the district and private mental hospitals, and to ask them to bring it to the notice of their respective committees.

CLINICAL MEETING.

Dr. FITZGERALD, Grangegorman Mental Hospital, demonstrated a case showing typical post-encephalitic Parkinsonian sequelæ, and a case of achondroplasia associated with symptoms of alternating insanity.

Dr. NORMAN GRAHAM read a very interesting communication entitled **"Some Remarks on the Treatment of General Paralysis by Diathermy"** (*vide* p. 89).

Dr. Graham's paper was followed by a lengthy discussion. The CHAIRMAN and many members expressed their appreciation of the gratifying results so far obtained by Dr. Graham in this comparatively new method of treatment.

Dr. MORAN read a communication on **"Anti-Typhoid Inoculation in Mental Hospital Practice"** (see below). Dr. Moran's paper also gave rise to a lengthy discussion on the difficult problem of combating outbreaks of typhoid and endemic typhoid in mental hospitals.

Dr. THOMPSON then read a communication on **"The Causes of Death in Female Admissions to St. Patrick's Hospital"**. This was discussed by the members present.

Dr. LEEPER then proposed that the Secretary should send a letter to Dr. Nolan expressing the sympathy of the Division in his recent serious illness and their gratification at his recovery. This was seconded by Dr. MARTIN, and carried unanimously.

PAPER.—"A Note on Anti-Typhoid Inoculation in Mental Hospital Practice," by PATRICK MORAN, M.B., D.P.M., Assistant Medical Officer, Mental Hospital, Mullingar.

Prophylactic inoculation with T.A.B. vaccine has been adopted as a routine procedure in the Mullingar Mental Hospital since 1927. In that year there was a serious outbreak of typhoid in the hospital—40 people were affected and 6 died. An exhaustive analysis was made of the order of occurrence of the cases, of the wards in which they occurred, the lines of distribution of food, milk, etc., but it was found impossible to fix the source of infection.

When faced with the possibility of a general epidemic it was decided to inoculate the entire hospital population, although it was recognized that this procedure would increase the difficulty of tracing the carriers, since it destroyed the value of the Widal test.

Other steps were also taken to deal with the problem. The water supply was unfiltered and not above suspicion. A scheme for mechanical filtration of the existing supply was prepared and passed by the Committee.

The hand-milking of the large dairy herd was considered another potential danger, and a mechanical milker was installed.

The sanitary annexes and fittings are old and defective, and a scheme for reconstructing and refitting these is under consideration.

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A big building scheme to provide an admission hospital and relieve overcrowding is now being formulated.

A systematic examination of the entire population with a view to discovering and isolating the carriers was decided on. This was rendered more difficult by the fact that the Widal test could not now be used to narrow the field; but in spite of the difficulties this investigation is now being carried out.

I have examined the hospital records for the twenty years prior to 1927, and I find that the yearly incidence of typhoid was an average of 8 cases, and that the average mortality rate among these was 16%.

Since general inoculation was adopted the case-incidence has not altered, but the mortality-rate has dropped to 2%. Besides this, a very striking feature has been a marked diminution in the severity of the symptoms, and an almost complete absence of the common complications and sequelæ. Heretofore phthisis was an almost invariable sequel to the disease, now we rarely see it. Hæmorrhage and perforation never occur now.

The duration of the immunity is generally considered to be about three years. We found it diminished after two years, and we have a general re-inoculation every two and a half years.

Every new case and every new employee is inoculated immediately on arrival. An initial dose of 500 million typhoid and 250 million each paratyphoid A and B is followed, after ten days, by a second dose double the first.

Prophylactic inoculation does not solve the problem of endemic typhoid in a mental hospital. It raises the immunity and so reduces the risk and the mortality, while the necessarily slow sanitary measures are being undertaken. When our overcrowding is relieved, our water supply and sanitary equipment reorganized, and the carriers detected and isolated, we hope that the incidence of the disease will shrink to the level prevailing among the general population.

Even at that level I would agree with the authority who recommends inoculation as a routine for all congested populations.

I have to thank my Medical Superintendent for his kind permission to use the hospita records and to read this note.

PSYCHOTHERAPY AND PSYCHO-PATHOLOGY SUB-COMMITTEE.

Psycho-pathological References for 1931.

English and American.

Members are reminded that the Secretary of the Sub-Committee, Dr. J. Ernest Nicole, Winwick Mental Hospital, Warrington, will be pleased to submit further lists, including the *Monthly Bibliography of the National Committee for Mental Hygiene (U.S.A.)* to any who apply for them. The Book-list, comprising all more important works on Philosophy, Pure and Applied Psychology, Psychiatry and Psycho-pathology, Educational and Social Psychology, Ethnology, etc., is now complete to December, 1932, and includes nearly 4,000 titles.

AMERICAN JOURNAL OF PSYCHIATRY.

Bowman, K. M., and Raymond, A. F.—Hallucinations in Manic-Depressive Psychosis.
" " Delusions in Manic-Depressive Psychosis.
Farrar, C. B., and Franks, R. M.—Menopause and Psychosis.
Gardner, G. E.—Measurement of Psychotic Age.
" Learning Ability of Schizophrenics
Horton, C. B., and Clarke, E. K.—Transvestism or Eonism.
Kasanin, J.—Affective Psychoses in Children.
Klüver, H.—Do Personality Types Exist?
Krout, M. H.—Personality Testing.
Langenstrass, K. H.—Treatment of Stupor.
Levin, M.—Basic Symptoms of Schizophrenia.
Levy, J.—Quantitative Study of Behaviour Problems.
Lewis N. D. C., and Blanchard, E.—" Recovered " Cases of Schizophrenia
May, J. V.—The Dementia Præcox—Schizophrenia Problem.
Miller, W. R., and Malamud, W.—Psychotherapy in Schizophrenias
Partridge, G. E.—Sociopathic Behaviour in Women.

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Sullivan, H. S.—" Socio-Psychiatric " Research.
,, Modified Psycho-analytic Treatment of Schizophrenia.
Zilboorg, G.—Depressive Reactions Related to Parenthood.
,, The Deeper Layers of Schizophrenic Psychoses.

American Journal of Psychology.

Jersild, A. T., and Thomas, W. S.—Influence of Adrenal Extract on Behaviour and Mental Efficiency.
Kneip, E. H., Morgan, W. L., and Young, P. T.—Studies in Affective Psychology.
Lehman, H. C., and Witty, P. A.—Vocational Attitudes in Relation to Pubescence.
Stagner, R.—Redintegration of Pleasant and Unpleasant Experiences.

Archives of Neurology and Psychiatry.

November-December, 1930.

Levin, M.—Archaic Regressive Phenomena in Schizophrenia.
Seif, L.—Environmental Background of Juvenile Delinquency.

1931.

Alexander, F.—Schizophrenic Psychoses.
Karpman, B.—Anxiety Neuroses.
Malamud, W., and Linder, F. E.—Dreams and their Relationship to Recent Impressions.
Murcie, W.—Rigid Personality as a Factor in the Psychoses.

Brain.

Creed, R. S.—Physiological Integration of Sensory Processes.
Holmes, G.—Cortical Representation of Vision.
Phillips, G.—Posture and Postural Reflex Action.
Pritchard, E. A. B.—Central Mechanism of the Reflex Arc.

British Journal of Medical Psychology.

Carver, A. E.—Psychology of the Alcoholist.
Coleman, S. M.—" Two on a Tower "—an Analytical Study.
Culpin, M.—The Nervous Temperament.
,, Conception of Nervous Disorder.
Dicks, R. W.—A Clinical Study of Obsession.
Groddeck, G.—Relation of Massage to Psychotherapy.
Hill, T. R.—Emotion from a Neurological Point of View.
London, L. S.—Obsessional Neurosis and Schizophrenia.
Lowenfeld, M. F.—A New Approach to the Problem of Psychoneurosis in Childbirth.
Money-Kyrle.—Remote Consequences of Psycho-analysis on Behaviour.
Moxon, C.—Freud's Denial of Religion.
Penrose, L. S.—A Case of Schizophrenia of Long Duration.
Stephen, A.—On Defining Psycho-analysis.
Woodward, J.—Experimental Methods in Psycho-analytic Procedure.

British Journal of Psychology.

Adams, D. K.—A Restatement of the Problem of Learning.
James, H. E. O.—The Problem of Interference.
Kerr, M., and Pear, T. H.—Unseen Drama and Imagery.
McCurdy, J. T.—The General Nature of Association Processes.
Mace, C. A.—Indirect Incentives and the Accuracy of Skilled Movements.
Robson, G. M.—Social Factors in Mental Retardation.
Thouless, R. H.—Phenomenal Regression to the " Real " Object (II).

British Medical Journal.

Berry, R. J. A.—Cerebral Cortical Structure and its Relations to Mental Disease.
Devine, H.—Psychic Pain and the Psychoses.
Hart, B.—Work of Child Guidance Clinic.

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INTERNATIONAL JOURNAL OF PSYCHO-ANALYSIS.

Boehm, F.—History of the Œdipus Complex.
Fenichel, O.—The Pregenital Antecedents of the Œdipus Complex.
,, Specific Forms of the Œdipus Complex.
Ferenczi, S.—Child Analysis in the Analysis of Adults.
Glover, E.—Sublimation, Substitution and Social Anxiety.
,, Therapeutic Effect of Inexact Interpretation.
Hendrick, I.—Ego Defence and Oral Ejection in Schizophrenia.
Klein, M.—Contribution to the Theory of Intellectual Inhibition.
Nunberg, H.—Synthetic Function of the Ego.
Penrose, L. S.—Freud's Theory of Instinct.
Reich, W.—Character Formation and the Phobias of Childhood.
,, The Characterological Mastery of the Œdipus Complex.
Schmideberg, M.—Psychology of Persecutory Ideas and Delusions.
Sergei, S., and Feitelberg, B.—Principle of Entropy and the Death Instinct.
Sharpe, E. F.—Technique of Psycho-analysis.

JOURNAL OF COMPARATIVE PSYCHOLOGY.

Aldrich, C. G., and Doll, E. A.—Problem Solving among Idiots.
Johnson, G. B.—Negro Scores on Seashore Music Talent Tests.
Peterson, J., and Telford, C. W.—Tests with Pure-Blood Negro Children.
McDougall, K. D., and McDougall, W.—Insight and Foresight in Animals.
Watts, R. H., and Ellis, A. L.—Efficacy of Free and Guided Learning.

JOURNAL OF MENTAL SCIENCE.

Burridge, W.—Several Articles on his L and H Factors in Psychology.
Coleman, S. M.—The Pre-psychotic Schizoid.
Ewen, J. H.—Psychological Effect of Certain Drugs on Syntonic and Schizophrenic Psychoses.
Harrowes, W.—The Reactive Manic Episode.
,, Significance of a Neurotic Reaction as a Precursor of Schizophrenia.
Hersey, R. B.—Emotional Cycles in Man.
McTavish, G.—Psychiatry in its Social Aspects.
Rudolf, G. de M.—Experimental Treatment of Schizophrenia.
Stephenson, W.—Studies in Experimental Psychiatry.

JOURNAL OF NERVOUS AND MENTAL DISEASES.

Bleuler, M.—Contribution to the Problem of Heredity among Schizophrenics.
Bragman, L. J.—Thumb-sucking and Other Auto-erotic Tendencies in Children as Portrayed in Art.
Ebaugh, F. G.—Present-day Trends in the Teaching of Psychiatry.
Hart, H. H.—Hypnosis in Psychiatric Clinics.
Hess, W. R.—On the Inter-relationships between Psychic and Vegetative Functions.
Jelliffe, S. E.—Some Historical Phases of the Manic-depressive Synthesis.
Kiene, H. E., and Dixon, H. H.—Study of Psychogenic Factors in Thyrotoxicosis.
Morgenstern, S.—Psycho-analytic Conception of Depersonalization.
Osnato, M.—Mental Disease and Delinquency in the Adolescent.
Stekel, W.—The Psychology of Compulsory Disease.
Zilboorg, C.—The Dark Ages of Psychiatric History.

JOURNAL OF NEUROLOGY AND PSYCHO-PATHOLOGY.

Gordon, R. G.—The Problem of Social Adjustment.
Miller, E.—Eidetic Imagery.
Paskind, H. A.—A Study of Phobias.
Wilson, S. A. K.—The Approach to the Study of Hysteria.

LANCET.

Adler, A.—The Meaning of Life.
Critchley, H. M.—Neurology of Old Age.

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Culpin, M.—Traumatic Neurasthenia.
East, W. N.—Mental Inefficiency and Adolescent Crime.
Fairfield, L.—Women Mental Deficients and Crime.
Howe, E. G.—Motives and Mechanisms of the Mind.
Read, C. S.—Out-Patient Psychiatry.
Riggall, R. M.—Case of Multiple Personality.
Yellowlees, H.—Delusions.

MENTAL HYGIENE.

Becker, H., and Bruner, D. K.—Attitude towards Death.
Benson, C. E., and Alteneder, L. E.—Mental Hygiene in Teacher-Training Institutions.
Childers, A. T.—A Study of some Schizoid Children.
Davis, J. E.—Resocializing Tendencies in Physical Education of the Mentally Ill.
Kasanin, J., and Cook, E. C.—One Hundred Cases Discharged against Advice from the Boston Psychopathic Hospital.
Levin, M.—The Feeling of Guilt.
Line, W.—Mental Factors that Affect School Abilities.
McCormack, T. J.—Personality: A Study in Verbal Meaning.
Marsh, L. C.—Group Treatment of the Psychoses by the Psychological Equivalent of the Revival.
Mason, F. V.—Study of Seven Hundred Maladjusted School Teachers.
Mengert, W. F.—Psychotherapy in Obstetrics and Gynæcology.
Patry, F. L.—Philosophy and Objective Aims of Modern Education.
Pearson, G. H. P.—Psycho-sexual Development of the Child.
Robinson, V. P.—Psycho-analytic Contributions to Social Case Work Treatment.
Stack, H. J.—Mental Causes of Child Accidents.
Stogdill, R. M.—Parental Attitudes and Mental Hygiene Standards.
Watson, G.—Demand for Psychological Counsellors in Education.
Wilbur, R. L.—Mental Health as a National Problem.

PHILOSOPHY (*late* JOURNAL OF PHILOSOPHICAL STUDIES).

Brown, W.—Hypnotism and Suggestion.
Carr, H. W.—Imagining and Reasoning.
Coates, A.—Philosophy as Criticism and Point of View.
Garvie, A. E.—The Constant and the Contingent in Human Thought and Life.
Rattray, R. F.—An Outline of Genetic Psychology.

PSYCHE.

Bentham, J.—Offences against Taste.
Crookshank, F. G.—Individual Psychology and the Bases of Science.
Flugel, J. C.—The Emotional Value of Dress.
Fortes, M.—Psychology or Psychologies.
Hogben, L.—Contemporary Philosophies in Soviet Russia.
King, C. D.—A Framework for Psychology.
Kyrle, R. M.—A Psychologist's Utopia.
McConnell, U. H.—Symbolism as a Mental Process.
Weber, H.—Some Disagreements with Freudian Theory and Practice.

PSYCHIATRIC QUARTERLY.

Hinsie, L. E.—Socialization and Compensation in Manic-depressive Psychosis.
Pfister, O.—Transformations Psycho-analysts Require in Ethics and Moral Education.
Schilder, P.—Principles of Psychotherapy in Psychoses.

PSYCHOLOGICAL REVIEW.

Bartley, S. H., and Perkins, F. T.—Consideration of Hunter's Criticism of Lashley.
Bretscher, T. A.—A Paradox in Psychological Theorizing.
Cannon, W. B.—Again the James-Lange and the Thalamic Theories of Emotion.
Dashiell, J. F.—Objective Character of Legal "Intent."
Gray, J. S.—Behaviouristic Interpretation of Concept Formation.
Hartmann, G. W.—Concept and Criteria of Insight.
Hull, C. L.—Goal Attraction and Directing Ideas as Habit Phenomena.
Krout, M. H.—Heredity, Environment and Developmental Process.
Langfeld, H. S.—A Response Interpretation of Consciousness.

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Line, W.—Gestalt Psychology in Relation to Other Psychological Systems.
Luh, C. H.—Avoidance of Repetitive Responses.
Maier, N. R. F.—Reasoning and Learning.
Middleton, W. C.—Psychopathology of George Fox.
Muenzinger, K. F.—The Primary Factors in Learning.
Park, D.—Freudian Influence on Academic Psychology.
Reiser, O. L.—Logic of Gestalt Psychology.
Smith, S.—The Schools of Psychology.
Thurstone, L. L.—Multiple Factor Analysis.
Warren, H. C.—In Defence of Some Discarded Concepts.
Weiss, A. P.—Solipsism in Psychology.
Wheeler, R. K., and others.—Errors in Recent Criticisms of Gestalt Psychology.

PROCEEDINGS, ROYAL SOCIETY OF MEDICINE.

Hart, B.—Psychology and Psychiatry.
Miller, E.—The Eidetic Image.
Strauss, E. B.—Principles Underlying Prognosis in Schizophrenia.

OBITUARY.

GEORGE HERBERT RAE GIBSON, *D.S.O.*, M.D., F.R.C.P.EDIN.

The untimely end of Dr. George Gibson, whose death occurred suddenly on July 19, 1932, aroused feelings of sincere sorrow among his many friends and colleagues. The only son of Dr. George Gibson, the eminent heart specialist, he was born in Edinburgh on April 8, 1881. Receiving his general education at the Edinburgh Academy, he commenced his medical curriculum at the University of Edinburgh in October, 1900. His study was, however, broken by a period of active service in the South African War. Graduating M.B., Ch.B. in 1906, he served successively as House Physician and House Surgeon at the Royal Infirmary. He was admitted a Member of the Royal College of Physicians of Edinburgh in 1908, and was raised to the Fellowship three years later.

After short periods of work and study in mental diseases at the Crichton Royal, Dumfries, the London County Council Asylum's Pathological Laboratory at Claybury, at Zurich and at Munich, he was appointed an Assistant Physician at the Royal Edinburgh Asylum in July, 1909, under the late Prof. G. M. Robertson. In July, 1910, he graduated M.D.Edinburgh with high commendation for his thesis on dementia præcox. Towards the end of 1910 he visited some of the principal post-graduate medical schools of the United States and Canada, and finally he settled in general practice at Vancouver, B.C., in the spring of 1911.

On the outbreak of the war in 1914 Dr. Gibson was appointed Medical Officer to the 7th Canadian Infantry, 1st British Columbia Regiment, with the rank of captain, and later became personal A.D.C. to the G.O.C., 1st Canadian Division. From May, 1916, to July, 1918, he was D.A.D.M.S. to this Division, when he became Second-in-Command of the 3rd Canadian Field Ambulance, and was present at every general engagement in which the Canadian Corps took part. In December, 1918, he was given command of the Canadian Convalescent Officers' Hospital at Matlock Bath. Some of his earlier war experiences are recorded in his *Maple Leaves in Flanders*. He was awarded the Croix de Guerre and the D.S.O.

On his demobilization in April, 1919, Gibson was appointed Commissioner of Medical Services to the Ministry of Pensions, Scottish Region, and in 1921 he became a Deputy Commissioner of the General Board of Control for Scotland.

The charm of Gibson's personality will long be remembered by those with whom he came in contact. He had a flair for friendship. His quiet equanimity and lively sense of humour seldom failed to soothe the ruffled feelings of others. In his capacity as Secretary of the Royal College of Physicians of Edinburgh, he maintained the dignity of office with rare distinction.

T. H. G.

NOTICES BY THE HONORARY LIBRARIAN.

The Library has now been reopened at 11, Chandos Street, W. 1. The Library is open to members between the hours of 10 a.m. and 6.30 p.m.; Saturdays, 10 a.m. and 1 p.m. Books are issued to borrowers between 10 a.m. and 1 p.m., and between 2 and 4.30 p.m.; Saturdays, between 10 a.m. and 12 noon.

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The Hon. Librarian will endeavour to obtain, as far as possible, any books on psychiatry and allied subjects required by members.

The following are the conditions under which books may be borrowed :

1. Books shall be lent only to a member within the United Kingdom and the Irish Free State who is not in arrears with his subscription.

2. No member may borrow from the Library more than three volumes at one time.

3. Members are liable for cost of carriage on books sent by post, and are responsible for the books from the time they leave the Library until they are received back.

4. Books damaged or lost while in possession of a member will be repaired at his expense or must be replaced by him.

5. A member borrowing a book or periodical from the Library shall be required to sign and return to the Librarian a form of receipt for the same, which will be regarded as an acceptance of these Regulations.

6. A member shall be entitled to retain a book or periodical borrowed from the Library for a period of twenty-eight days, unless the book is required by another member, in which case it can be recalled by the Librarian at the expiration of fourteen days.

7. In the event of a member failing to return any book or periodical within seven days after receiving notice from the Librarian (on the expiration of the period referred to in Rule 6), the Library Committee shall be at liberty to purchase another copy, the cost to be charged to such member, who shall not be allowed to borrow any other book until the sum thus expended be paid.

8. All communications should be addressed to " The Librarian, Royal Medico-Psychological Association, 11, Chandos Street, Cavendish Square, W. 1 ".

Books Added to the Library.

Presented by Cmdr. W. S. Bainbridge :

Report on Sixth International Congress of Military Medicine and Pharmacy (Psycho-neuroses of War). 1931.

Presented by Dr. J. E. Nicole :

Rickman, J. *Index Psycho-analyticus.* 1893–1926.

Stapleton, O. *Last and First Men: A Story of the Near and Far Future.* (Second edit.) 1931.

Zuckerman, S. *The Social Life of Monkeys and Apes.* 1932.

Nicole, J. E. *Index of Books of Psychological, Psycho-pathological and Psychiatric Interest published since* 1900.

Historical works presented by Dr. J. R. Whitwell (Hon. Librarian) :

Compendium Medicinæ Practicæ. Louvain, 1791.

The English Physician. Nicholas Culpepper, London (n.d.).

Perfect, William. *A Remarkable Case of Madness, and the Diet and Medicine used in its Cure.* Rochester, 1791.

John J. Wepfer. *Observationes medico-practicæ de affectibus capitis.* Schaffhausen, 1727.

Coelius Aurelianus. *De morbis acutis et chronicis.* Amsterdam, 1722.

Willis, Thomas. *Cerebri Anatome.* London, 1664.

Circulation of Journals.

The following journals are circulated from the Library :

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.
Journal of Nervous and Mental Diseases.
Revue Neurologique.
Archives of Neurology and Psychiatry.
Journal of Comparative Psychology.

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"Sociorum Annales."

The Hon. Librarian is prepared to receive and store the life records of any member wishing to deposit them, on the understanding that they are solely for the use and information of the Association. They should be sent in sealed packets (with the name clearly written on the outside) in covering envelopes addressed to the Hon. Librarian.

NOTICES BY THE REGISTRAR.

Bronze Medal and Prize for 1933.

Dissertations for the Association's Bronze Medal and Prize must be delivered to the Registrar by April 30, 1933.

Divisional Prizes for 1933.

Papers certified as eligible for this competition must be forwarded to the Registrar not later than April 30, 1933.

Gaskell Medal and Prize.

The examination for the Gaskell Medal and Prize and the examination for the Certificate in Psychological Medicine will be held at the Maudsley Hospital, Denmark Hill, London, S.E. 5, on Friday, May 26, and Saturday, May 27, 1933.

Applications for entry to each examination to be made to the Registrar, St. Andrew's Hospital, Northampton.

There is no fee for entrance to the Gaskell Prize Examination.

The entrance fee for the examination for the Certificate in Psychological Medicine is three guineas.

NOTICES BY THE GENERAL SECRETARY.

Deaths.

CECIL F. BEADLES. GEORGE STEVENS POPE. JAMES HUMPHRY SKEEN.

Appointment.

N. H. M. BURKE, M.D., D.P.M., to be Medical Superintendent, Cell Barnes Colony for Mental Defectives, St. Albans.

[We regret that Dr. Burke's appointment was incorrectly described in our last issue.—EDS.]

W. McC. HARROWES, M.D.Glasg., D.P.M., to be Medical Superintendent, New Saughton Hall, Polton, Midlothian.

NOTICES OF MEETINGS.

Quarterly Meeting.—Wednesday, February 22, 1933, at 11, Chandos Street, London, W. 1.

South-Western Division.—Spring Meeting at Bailbrook House, Bath, Date not yet fixed.

Northern and Midland Division.—Spring Meeting at Stafford County Mental Hospital. Date not yet fixed.

Scottish Division.—Friday, February 17, 1933, at Woodilee Mental Hospital, Lenzie.

Irish Division.—Thursday, April 6, 1933, at St. Patrick's Hospital, Dublin.

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THE JOURNAL OF MENTAL SCIENCE

BY AUTHORITY OF
THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

EDITORS
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Alexander Walk, M.D., D.P.M.
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THE JOURNAL OF MENTAL SCIENCE.

Communications on general editorial matters, including MSS. for publication, books for review and other printed matter, should be sent to the **Editors, Cane Hill Mental Hospital, Coulsdon, Surrey.**

Communications regarding the *Epitome* section, including journals to be abstracted, should be sent to the **Editors, County and City Mental Hospital, Burghill, Hereford.**

Communications and inquiries regarding sales should be addressed to the Publishers, **Messrs. J. & A. CHURCHILL, 40, Gloucester Place, Portman Square, London, W.1**; and those regarding Advertisements to **Messrs. S. FRETWELL & Co., 5, Wine Office Court, Fleet Street, London, E.C.4. 'Phone: Central 0749 (2 lines).**

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

PUBLICATIONS.

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The Charter and Bye-Laws of the Association. Price 1/-. Post free.

Engraved Book-Plate of the Association. Price 1/-. Post free.

"The State Registration of Mental Nurses." Parts I and II. Price 6*d*. each. Post free.

From MESSRS. J. & A. CHURCHILL:

General Index of the Journal, vol. lv to lxviii (inclusive). Price 2/6. Post free.

Binding Cases for the Index, price 2/- (post free), are obtainable from Messrs. Adlard & Son, Ltd., who also undertake binding, including case, for 4/6.

Catalogue of Library of the Royal Medico-Psychological Association. 1928. Price 2/-. Post free.

From MESSRS. BAILLIÈRE, TINDALL & COX:

"Handbook for Mental Nurses." 7th edn. 1923. Price 6/- net.

"Manual for Mental Deficiency Nurses." 1931. Price 6/- net.

From the REGISTRAR, St. Andrew's Hospital, Northampton:

"Regulations"
"Rules"
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Part I.—Original Articles.

THE DEPRESSIVE REACTION TYPES.

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"DYSPHORIA, or misery, in various degrees, is perhaps the most frequent and most widespread of all disorders of mind, and that with the most numerous associations with other disorders."—Mercier's *Text-book of Insanity*.

Quotations of this type may be multiplied.

The French school of psychiatry, with their devotion to carefully formulated case-material, produced, at the hands of Chaslin, Magnan, Falret, Cotard, Lalanne, Régis, Pitres and many others, a very long list of symptomatically differentiated depressions. The position became, in fact, rather confused. In Germany, on the other hand, Kraepelin, at one stroke, cleft down through the whole problem by separating off the great group of manic-depressive insanity. Shortly after this, however, he had to admit the existence of a number of depressive cases which obviously did not belong to this group, thereby creating the necessity of differentiating manic-depressive cases from the other depressions by some standard which would take account of cause, course and outcome. The ætiological position, unfortunately, at once became unclear, because Kraepelin had to admit that both in the manic-depressive cases and in the pure depressions there was often evidence of some precipitating factor. Further search for a clinical differentiation led to the suggestion that the manic-depressive group moved in a rut of sadness, retardation and loss of centrifugal activity, while the other group—the so-called psychogenic type—showed an activity expressed as a perturbation from the psychic point of view, and sometimes as a restlessness going on to agitation. On these lines at the present time we are well used to observing the akinetic, inhibited, rather frozen appearance of the manic-depressive case without very much discoverable

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content of thought, and seldom any central topic linked up to the affect. And we contrast this with something essentially more alive, aggressive, meaningful and topical in the non-manic-depressive cases.

In this way the separation of a group of non-circular depressions has been fairly well warranted by the facts. Much less easy is the grouping of these cases into categories which will have some prognostic significance.

The question is one of observation and formulation with an eye to the group pattern as well as the individual reaction pattern. Outstanding patterns and syndromes exist which, by reason of background, are not so obvious as they should be. The danger in attempting to produce groupings is that of bringing in things which do not belong—a difficulty which Bleuler indicated very clearly by pointing out the frequent psychopathic basis of many depressive conditions.

Lange, for example, recognized four types of the condition: Endogenous melancholias, psychogenic depressions, psychically produced melancholias, and reactive melancholias. These types of depression, he stated, were to be differentiated from classical melancholia somewhat as follows: Environmental conditions play no part in the classical melancholia, but do so in the psychogenic depression. There is no topic in classical melancholia. The biological disturbance of melancholia is not present. The syntonic personality of the melancholic is contrasted with the rich variety of different personality types in the psychogenic depressions. He brings in other points, such as the asthenic background of the psychogenic depressive. He admits, however, that the line of demarcation is not sharp.

Wexberg made a grouping based on heredity, physical status, physical symptoms and mental condition. Several types came out of this: (1) A cycloid, showing physiological disturbances and insufficiencies. This group rather suggests those cases which demonstrate Janet's "fear of activity". (2) A schizoid group with sex inferiority, such as psychic impotency; and this is certainly a common enough prodromal feature. (3) A constitutional group of individuals where the attack is an exacerbation of a life-long depressive set. (4) A cycloid-schizoid group showing the combined characteristics of pure cycloids and pure schizoids. (5) Finally, there is an involutional group with the well-known hypochondriacal picture.

As a contrast to the foregoing attempts to make fairly broad groups on the basis of important common features is the classification of Benon. He arranges the depressions into a general group in which there are (1) depression with delusion formation; (2) depression without delusion; (3) depressive stupor; and a special group arranged according to dominant symptoms and also with special reference to the ætiology. The dominant symptom group contains a list of ten headings: Self-accusation; persecuted feelings; hallucinatory; asthenic; hypochondriacal; with mutism; confusional; impulsive; with anxiety; and finally Cotard's syndrome, composed of ideas of negation

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and self-accusation. In addition he wishes to have carefully separated conditions which simulate depression, such as hypochondria, neurasthenia, periodic asthenia, congenital tendency to sadness without depression, alcoholism and boredom.

Adolf Meyer, some years ago, made a formulation of the depressive states. He differentiated the following broad groupings:

1. A constitutional depression in individuals of pessimistic temperament. These examples often show anxiety and improve with better surroundings.

2. A true simple melancholia or "unjustified depression". The characteristic features are insomnia, præcordial pain, self-depreciation and guilt ideas, inability, indecision, retardation. Later, and proportionate with the severity of the condition, there comes a delusional and hallucinatory background for the thought content. Fear is common both for the patient and the family. Suicidal impulses, loss of feeling, and sometimes stupor are seen.

3. A prolonged neurasthenic malaise. In these cases there is dissatisfaction with the individual's performance, seen in his own formulation either as due to the pressure of bad luck or as a hypochondriacal handicap. This group approaches the paranoid and schizophrenic types.

4. A depressive delirium—akin to the *raptus melancholicus*. The chief feature is massive fear, so that even suicide is due more to the despairing fear than the depression. In these cases and in the simple melancholics there are seen the nihilistic ideas now so generally thought of in connection with the so-called involutional cases, but also seen in organic brain disease, both senile and paretic types showing them.

5. A katatonic melancholia, closely related to type 3, occurring sometimes acutely with hallucinatory commands to "be good", with simple acts symbolic of penance, humility and abasement. This type of behaviour frequently becomes stereotyped. Syndromes of this type sometimes form an episode in schizophrenic-paranoid episodes.

Of these five groups the first and second are the most commonly recoverable, but are present in individuals prone to recurring attacks. The second group tends to pass gradually into the presenile depressions with their absurd hypochondriacal delusions, shallow affect and peevishness described by Hoch and McCurdy. Type 3 very often passes on to schizophrenia or paranoia.

Meyer says, "The individual differences in a large series of cases of melancholia are so great that it would be a grave injustice to the facts to try to describe them as one condition in one connected composite picture".

More recently, Gillespie, in an analysis of twenty-five cases, found that they fell into two groups, reactive and autonomous, with, as a sub-group, involutional cases.

The term "reactivity" was used by him in a wide sense, embracing not only ætiological factors, but influences operating during the course of the illness. These cases formed about half of the observed material (14), and demonstrated

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as causal factors infections, bereavements, business losses, dissatisfaction with career, dissatisfaction in love.

The reactive group showed thinking difficulty, reduction in motor activity with high sense of effort, rather differentiated, some types of task being much easier than others. The topic of thought is generally the affective condition itself. The ætiological factors are not always connected up by the patient. He mentions the presence of anxiety, but makes it take a subordinate *rôle*, pointing out that the depression is the dominant symptom.

The autonomous depressions showed no variation in the depth of the affect in response to intercurrent stimuli. Other affects, such as remorse, were seen. An interesting point is that he found that in the autonomous cases the patient's conception of the depression was that of "a foreign body" not part of himself, as in the reactive cases. The reactive group rather blamed the environment for the breakdown, while the autonomous cases described a personal unworthiness.

The second group showed a more ominous heredity than the first, psychoses being present in near relatives, while in the reactive group neurotic reactions only were found.

The first group included quiet, shy, sensitive individuals of the worrying type, while the autonomous cases had been of a more vigorous and sociable type.

The hypochondriacal involutional sub-group showed a similar personality to the first or reactive group. Clinically they demonstrated a "flatness"—an impoverishment of affect and psychic activity.

The conclusion which he reaches is that reactivity is the only valuable indication and that there is no single criterion, but that for prognostic and therapeutic indications one must search the whole history by a series of longitudinal sections.

In the classification of Meyer and of Gillespie there is evidence of a real avoidance of bringing in conditions which do not fit in, that is not seen in the continental groupings.

Presumably we should think of the affective reaction sets as essentially a prolonged fixation of mood, from time to time with an appropriate topic, but also self-governing in the sense that indifferent or quite inappropriate topics may be pulled into line.

We may see also equivalents: anger may be and often is an equivalent for elation, and fatigue may be an equivalent for depression. Even on a still more vegetative level the longitudinal section of a case showing a frank depression may allow us to accept as equivalents previous spells of loss of weight, of wakefulness, of gastro-intestinal retardation, of indecision, morning tiredness and so on.

The affective reactions may be looked on as disorders of an organized balancing system—quite definitely pinned down by McDougall to two opposed

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instincts. Depression suggests a protective tendency ; the akinetic features, mental as well as physical, suggest the cessation of all movement in many organisms—the lower animals for example—when faced by danger. To the same class of phenomena belongs the flexion attitude of many depressives, and suicide is, in the last extreme, a flight.

An admixture of toxic and parergasic (paranoid and schizophrenic) features may occur, but as long as the admixtures are not of the nature of more or less automatic complex determinations out of keeping with the affect trend, and as long as the general reaction remains consistent and in harmony with the affect and free from fundamental distortions, we may call it an affective pattern.

It is felt to be unnecessary to detail the long list of symptoms generally agreed to be characteristic of the depressions. It falls to be pointed out, however, that here and there care has to be exercised in the separation of the true retardation thinking difficulty and general dearth of resources from mere indifference and blocking.

Presumably one has to accept the existence of some unclassified residuum existing as mixed states. Paranoid projection features may be seen, as also negativistic phenomena—these form the syndrome of Cotard, which the French place in the depressive group.

Meyer says, "It is my impression that the really and frankly affective reactions, wherever they occur and no matter in what form (*i. e.* in the shape of whatever equivalents, such as dyspepsia, fatigue, insomnia), represent facts pointing to more or less specific and clear and relatively adult problems of adjustment or problems of constitutional make-up, mainly problems of inner adjustment without any essential distortion of the personality".

With the object of determining whether or not a group of depressive cases could be shown to arrange themselves into useful categories, 70 cases were examined.

The first broad division was the separation already pointed to, and made by several observers, into reactive and autogenous.

Certain other groups, however, seemed to appear. As a result of a detailed analysis of the cases the following list was arrived at : (1) Reactive depressions, (2) autogenous depressions, (3) recurrent depressions, (4) psycho-neurotic depressions, (5) depressions with aversion, (6) involutional types.

It will be remembered that Gillespie states that reactivity should be measured in terms of the patient's reaction to stimuli during the illness as well as the reaction to the ætiological factor. Perhaps this is merely a way of pointing out that these cases, which have broken down under the influence of certain factors, may logically be supposed to respond to subsequent influences, and to be individuals in whom environment is powerful.

In forming this group, cases were held to belong to it where difficulties in the life situation clearly appeared as a topic of preoccupation in obvious

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temporal contiguity with the onset of the illness. Fourteen such cases were examined.

The symptoms manifested, besides the formal depression, were lack of concentration, loss of interest, insomnia, loss of thought capacity, heightened sense of effort, headaches, forgetfulness.

Self-accusatory trends were not prominent. Occasionally there was a complaint of having "ruined one's life" or "made a mess of things".

The ætiological factors in the cases examined were—sex and marital difficulties 11, work failures and difficulties 2, physical illness 1.

The operation of the ætiological factors seemed to be either catastrophic or cumulative. The more cumulative they were the more severe and long-lasting was the response. Also in proportion as the affect was topical, so the reaction became less severe. Constitutional and hereditary factors seemed to play a definite *rôle*, and notable among the personality features were the presence of unimaginativeness, materialism and rigidity. The cases did not show any uniformity in the diurnal variation of severity of symptoms, some being better in the evening and others in the morning. As Gillespie indicates, the retardation was not marked. The evaluation by the patient was rather variable. Some realized clearly why they were depressed. Others could be helped to arrive at conclusions and some could not. In all cases there was an identification with the affect, and an inability to consider indifferent topics at all, but no tendency to apply the affect to them. In this way the affect was noted to be a fairly definite thing, but not regulative of all the patients' behaviour.

Of the 14 cases examined 7 recovered, and the cases which did not recover demonstrated no single factor not found in the others, except a somewhat greater tendency to ideas of unworthiness.

In contrast to the somewhat meaningful story of the reactives, the autogenous depressive presents a number of differences, indicating a much more sweeping type of disorder. The reactive group might be called partial reactions, and the autogenous, total reactions. Remorse and guilt ideas are here very much more marked than in the reactives, and the affect embraces and involves much more of the total personality of the individual. There is a distortion and a rut formation which is not seen in the reactive cases. Amongst the autogenous depressions—15 were examined—a large proportion (10) showed recurrences.

The recurrent cases showed certain characteristic features, some of which are so well known as to require no more than mention—for example, the tendency of the attacks to become more severe as age advances. For the rest the picture presented the same features as the single-attack autogenous depression.

Other features were noticed, however. The personality of the recurrent cases indicated a much more constitutionally depressive set than the simple cases. As well as the rigidity already mentioned there was evidence of an apprehensive worrying disposition. The history of the early life indicated two

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features: (1) A tendency to be preoccupied with security of financial position and fear of loss, and (2) the presence of depressive equivalents, in the shape of fatigue, even as early as childhood.

As mentioned, the attacks are progressively more severe, and in them certain alterations in the thought content are seen. There is the appearance of more distortion in the guilt ideas, more reference to hell, damnation, gaol, torture, etc. There appears more agitation than in earlier attacks and more hypochondriasis. In addition, rather strikingly, the topic of depression sometimes becomes more sharply focused on something quite real. For example, two such depressive males, each having had four or more attacks, were extremely preoccupied with the fear of having to resign before their full pension was earned. This, of course, was a common-sense and understandable reaction, but it formed an interesting couple with the fact that each had had serious difficulty with his superiors earlier in life without producing depressive response. Also there was the case of an elderly woman of the recurrent depressive type, who had had four attacks. In each attack she had worried about money without adequate immediate cause. In the last and worst attack the topic of depression was the failure of her son to make his way in life.

Some reactive cases were noted to recur. Here the recurrences were separated by a long gap—about twenty years—and in the second attack the affect was non-topical, although a clear difficulty in the life situation existed. The depression was acute, but without retardation or agitation. There was a progressive improvement from morning to evening. The response to therapy was not so labile as that of the true reactives.

Out of the cases examined, twenty appeared in whom there was a psychoneurotic tainting. Here the difficulty was to avoid inclusion of cases not truly depressive. Cases showing dejection, discouragement, boredom and other similar mixed affects were rejected. Only those demonstrating genuine depression were accepted in this group.

The *rôle* of hypochondriasis in the depressive reaction is a special one, and the cases on a psychoneurotic basis included the anxiety states and the obsessive compulsive conditions. The former predominated, and clear obsessional features were only seen in one case.

The anxiety type is characterized by the constant presence of fear or anxiety, which only appears from time to time in other types of depression.

Of the existence of anxiety in depressions much has been written. The authors who have contributed most, Lalanne and Brissaud, bring a great deal to the discussion. Their views come most relevantly here.

Like most of the French school, they see three degrees of this emotional state—*inquiétude, anxiété, angoisse.* The triad can be readily understood. Of the last two, it is said that anxiety proper is chiefly cerebral, while anguish is bulbar. It would seem, however, that this is based on the objective activity

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of bulbar mechanisms in states of extreme anxiety (*angoisse*). It is felt that the distinction ought to be clearly one of degree and not of mechanism, in the absence of definite neuro-pathological data.

"*L'inquiétude*", or disquiet, is characterized by "depression, sadness, vague apprehensiveness, and unmotivated irritability". Anxiety shows a more obviously physical syndrome. Precordial distress is present, with respiratory difficulties and some need for ease, seen in a restlessness amounting to agitation. Mentally, the apprehensiveness becomes more topical. In the connection of the topicality of the apprehensiveness the modern result of observation of this point has some significance. It has been established that in the affect psychoses, when there is a predominant topic, there is little free affect.

The last of the three, *angoisse*, is definitely an acute syndrome. The description is of a vaso-vegetative disturbance, with pallor, sweating, tachycardia and fear of imminent death.

From the more general aspect there are a number of important details in connection with depressions showing anxiety.

Anxiety occurring normally is a short-lived condition, circumscribed and having a definite cause. Pathological anxieties (over-frequent, over-easily produced) are an indication of the neuropathic constitution, and this statement has to be compared without material. It is true to say that the anxiety syndrome involves the total organism.

The purely mental component of the state is usually an apprehension, very often of dissolution ; and here again is the fear of loss of integrity (or wholeness) mentioned earlier. Consequently it is logical to suppose that the anxiety, anguish-disquiet group in the depression may be regarded as exacerbations depending on the presence of a neuropathic tendency to vaso-vegetative instability. Certain cases of depression with anxiety were examined with these points in mind.

Mention has been made of the neuropathic soil in which pathological anxiety commonly grows. The neuropathic constitution is taken to be that make-up wherein occur vaso-vegetative and neural disorders, including tachycardias, asthenias, sweat phenomena, asthma, tics, bed-wetting, nail-biting. In the psychopathic personality, on the other hand, there come irritabilities, unreliabilities, mood changes, odd antisocial acts, irresponsibilities, coupled with odd biological disorders, capriciousness of sleep and appetite.

A group of twelve depressions, with anxiety as a symptom, was examined. All three shades of the anxiety phenomenon were seen. In addition, however, all the cases showed some or all of the following features : Some personality indications of psychopathy ; definite evidence of neuropathy (enuresis, etc.) ; pre-psychosis anxiety attacks or similar phenomena (sweatings, dyspnœas, panics) ; a topical depression of the nature of appreciation of a more or less genuine failure in life ; sex trauma ; unreality feelings ; and notably a subjective depression greater than the objective.

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The cases were all in the decade 20–30. The direction in which this evidence points is clear. It demands the query already made—What are we entitled to call a depression as such?

Out of the literature there come a few important contributions. Lalanne suggests that the presence of the anxiety attack, when not part of the anxiety neurosis, is, to some extent, a prodromal stage in psychotic evolution. This is abundantly true, but not true only of the affective psychosis.

Also mention is made of hyperalgesias, hypochondrias, cephalalgias and other head symptoms, fullness, emptiness and so forth. These phenomena are but a few instances of the minor distortions of the organism which are prodromal so frequently. They may well enough be supposed to depend on a vaso-vegetative instability, producing, as Lalanne says, "exaggerated sensations" . . . "paræsthesic sensations of heat and cold". In the same way, if some overflow into the territory of the pyramidal and its associated tracts occurs, there will be the appearance of panic.

With regard to the integration of the purely affective item into the whole there are the following pronouncements: First of all there is the statement that when anxiety becomes psychotic, then there enters into it some sadness. To some extent this is merely a question of observation; the cases reviewed in the series, however, do not show a definite progression in this direction. It is just as common, and it would be as true to say, that anxieties may go on to passivity feelings and ideas of influence. The clinical evidence does not show that the apprehension, or "anxious expectancy" as Hartenberg calls it, progresses and changes into a feeling of sadness. The depression in the series of cases examined is too topical to allow of this view being taken.

According to the French group the transition is marked by thinking difficulty, cœnaesthetic disturbances and hypochondria with brief attacks of "*terreur indicible*".

They state that as to the more purely depressive shades there come feelings of guilt, ruin, doubt, damnation. These are some of the shades of feeling in the depressive reaction, but they were not found in all the cases examined. Instead, in the series examined there were nervousness, worry, mild insomnia, thinking difficulty, memory and ambition loss, lack of confidence, inferiority feelings, restlessness, fear, despondency, embarrassment.

All these reactions are not very far away from mood fluctuations within limits compatible with life at a normal social demand level. The point is, however, that the patients in this group were heavily loaded otherwise, as has been demonstrated.

Many of the findings have been a source of direct disagreement between good observers. Associated with the anxiety there is occasionally seen an obsessional trend without much tension. One of the cases examined showed this clearly during the prodrome of her psychosis from which she recovered. Régis,

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Pitres, Seglas, Charpentier all agree that this is seen, while Falret and Magnan strenuously deny it.

Whatever be the real connection, there is no doubt that there is at least a *rapport* between the anxiety attacks and the depression. It is not common sense to deny the sympathetic nervous system a response to allopsychic depressive happenings.

Brissaud quotes the work of Franck, who produced the anxiety syndrome in animals by stimulating the vagus, and queries vagal irritation as a causal factor. It was found by examining a number of depressives on this specific topic that there was no correlation between vagal-epigastric phenomena and the existence of anxiety phenomena. The situation falls to be summed up in this way:

A depressive reaction is seen in certain individuals who show anxiety phenomena.

There is no absolute correlation, but some *rapport* between the two.

The anxiety features are generally part of a neuropathic tendency, with which is combined some psychopathy. The depression is essentially topical, reactive (*i.e.*, a response to a difficulty in the life situation) and mild, but tends to chronicity.

Cases are seen from time to time, belonging in the psychoneurotic group, which fall closely into line with the " neurasthenic *malaise* " of Meyer. Examination of several such types reveals that the full-blown depression has been heralded by a prodrome, sometimes lengthy, in which the general picture has been that of the somewhat loose conception bound up with the term " neurasthenia ". These cases of irritable weakness going on to frank depression, like the other cases with a psychoneurotic background, seem to have a bad prognosis, accounted for rather by lack of assets than by severity of attack. An example of this type of case is seen in a woman, æt. 28, who had to stop her work as a school teacher on account of fatigues, headache, " nervousness ", incapacity and tachycardia without any feeling of sadness. The supposed ætiology was friction in her work. After a lapse of about three years the formal depression came up with clear guilt and unworthiness ideas; an attempt at suicide led on to a state where there was agitation, guilt, absence of thought, fear of involving the family and a complete absence of insight. The personality showed a doubting, tremulous, over-conscientious make-up. The father had dominated, thwarted her as a child; the home life had been discontented and poor. This patient has not responded to treatment, and her history indicates the ominousness of a prolonged neurotic prodrome.

The next group was one of " depression with aversion ".

These cases did not form a large percentage—only 7 out of the total.

Many of the involutional cases demonstrate a hostile attitude, and Hoch and McCurdy point out that peevishness is the important symptom in these cases. Many depressives also exhibit quite definitely paranoid trends. Both

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these groups are well recognized. In them there is generally a considerable amount of restriction of general interest, and deterioration of affective response in any other direction.

The true aversion depression is an interesting reversal of a factor in the motivation of the general retreat from life of the depressive, frequently expressed as guilt or unworthiness. Here the individual complains of a depression, frequently some loss of feeling, lack of concentration and energy, but, in addition to these features, there is an averse, "offish" reaction. The environment is blamed for the condition as a set of circumstances which have acted as an unfair and unjustified handicap on the sufferer, who can bear the burden no longer. The difference between this and the purely reactive depression lies in the attitude of the patient to the external world. In the pure reactives it is a shrinking from the traumatic factor. In the aversion cases it is more of a turning away—as the name implies. The cases examined showed no retardation, but from time to time some agitation. There is no self-accusation or sense of guilt.

An example of this type was seen in a woman, æt. 56, who developed a depression without any obvious cause. She at first presented the appearance of a co-operative and rather mild depressive with good insight. As her life situation was gone into, she described a dissatisfaction with her position, with her husband and her relations-in-law, who were all, in fact, rather stable, reliable types. On their non-understanding attitude she blamed her illness, not as an active persecution by them, but as the effect of their lack of harmony with her. Soon this aversion overflowed into her hospital environment: she became obstructive to treatment, prone to argument, always trying to find some way of bending the routine and the treatment to suit some idea of her own as to what was more fitting. She finally left the hospital against advice. This depression had lasted on and off for more than ten years.

Cases of this type, with their peculiar reversal of the guilt component, form an interesting problem for the application of the sadistic explanation of depression which psycho-analytic theory offers.

The cases of this type which have been examined have all shown an exaggerated degree of the rigid, dominating, obstinate personality-set noticed in the other groups and all have done badly.

The involutional depressives with the well-known syndrome of peevishness, hypochondria and nihilistic ideas and restriction of affect have been well delimited by Hoch and McCurdy. A subgroup of these cases, however, has been observed. The condition appears most commonly in women in the presenile period. The condition may come on quite suddenly, and impulsive suicidal attempts take place early.

It is not claimed that the cases quoted are absolutely typical, for the groups suggested shade into each other.

There seem to be the following groups: One where a real life-situational,

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dynamic cause can be seen; another where the cause is more entirely constitutional, a group with a special affective handicap in the form of the psycho-neuroses, a group with aversion where the prognosis is bad, and a special type of age-bound depression with a better prognosis than might be expected. The prognosis in reactives seems very much a question of balancing the trauma and the personality assets. In the autogenous cases the personality alone can be focused on. Emphasis is laid on rigidity of the personality as an ominous sign, and this is made more meaningful if we consider affect as a regulator of behaviour and a chief factor in the establishment of action patterns. In addition, the type of onset—cumulative or catastrophic—and the extent to which the affect is bound to the ætiological topic seem to have some prognostic significance.

Conclusion.—In dealing with the affective reaction patterns of the depressive type, it appears important to regard the position as being an attempt on the part of the patient to manage his social and personal integration by means of a regulative mechanism which is not functioning economically.

Recapitulation of the psycho-biological development of the individual makes it abundantly clear that affect as a regulator exercises a progressively more delicate type of control as age advances. The individual differences in affective regulation and the utilization of experience are processes described by Meyer as "experiments of Nature". It would seem that in the formulation of broad depressive groups, such as has been here attempted, there appears a set of alternative, side-track types of behaviour, equivalent experiments to normal affect mechanism, but not capable of being brought to useful conclusions.

During the clinical examination of depressives and their social setting, it becomes well established that we are dealing with circumstances where specific affective responses have been much more unhelpful than otherwise, usually demonstrably so over a long period of time—unlike the state of affairs in the better integrated, where emotional drives help to push the individual to some end-result of satisfaction. Basically the specific emotional "rises" of the depressive types work in terms of inhibition, either predominatingly psychological, or biological. The extent to which motivation comes in is less important, because behind the motivation is the psycho-biological constitution of the individual. Experience with depressive cases sooner or later leads to an appreciation of, and respect for, the biological features of a condition where, as Benon says, the best psychotherapy is sympathetic discussion "*sans métaphysique*".

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JUNG'S THEORY OF PSYCHOLOGICAL TYPES: A CRITICAL ESTIMATE.

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INTRODUCTION.

IT is many years now since Jung first drew attention to what he believed to be of far-reaching significance in the psychological understanding of human personality: the presence of two great psychological divisions of mankind, the outwardly directed or "extraverts", whose interests and activities turn mainly towards the outer world and whose lives correspond directly with objective conditions, and the inwardly directed or "introverts", who are influenced more by subjective factors, and whose attitude to the outer world is an abstracting and depreciatory one.

One might imagine that a theory of such undeniable importance would have received the closest scrutiny at the hands of the professional psychologist. It is true that reference is frequently made to Jung's theory in psychological writings, but there has been little in the way of critical commentary. With a few notable exceptions, the observations made on this theory possess a striking uniformity of expression. More often than not they are a mere paraphrase of Jung's words, and betray an unmistakable reluctance to proceed any further in the way of critical exposition.

The reasons for this are perhaps not far to seek. Jung was originally a psycho-analyst, and still is so in the wider acceptance of the term. It has taken some time for the professional psychologist to become acclimatized to these doctrines, several of which must still be held to be of doubtful validity. Nor was it the custom of the psychologist, until recent years, to explore the field of mental disease which had hitherto been left to the psychiatrist, who was as yet so enamoured of neuro-pathological problems that he could not be got to grant to psycho-pathology the status of a science; nor was he possessed, save rarely, of the necessary equipment and training for so technical an investigation. Meanwhile, the psycho-analyst proper, who did possess such training, did not concern himself seriously with Jung's teaching, for it represented too grave a departure from the accepted and inviolable Freudian creed.

But such blame as there may be cannot be entirely apportioned amongst his readers. Jung's theories have a peculiarly thought-baffling quality. It is

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not that his theory of psychological types is at all vague. Chapter and verse are everywhere quoted. He is a patient expositor, " line upon line, and precept upon precept ". Nor does the technicality of his language offer any obstacle to our understanding. There is not a term that he does not define and illustrate and interpret.

And yet Freud, in his " Collected Papers," tells us that he finds Jung incomprehensible. Perhaps the explanation is to be sought in the very theory of opposed psychological types which Jung has elaborated, in that fundamental difference of viewpoint which makes us blind to the psychological truth seen by our neighbour.

Be that as it may, our first duty in this inquiry into Jung's type theory is to clear the ground sufficiently to enable us to have a proper view of it, and to consider from what angles it may best be envisaged.

No approach can be made to the study of Jung's theory of psychological types without some knowledge of his general psychological teaching. A detailed account of this would involve us in the history of the founding of psycho-analytic theory by Freud, the establishment of its many doctrines, and the dissensions which led to the withdrawal of Adler and of Jung, who in turn instituted schools of " Individual Psychology " and " Analytical Psychology " respectively, thus relinquishing for their work the appellation of " Psycho-analysis " (in its technical, if not in its popular sense) to Freud its founder.

It is no part of our present purpose to enter into a detailed exposition of this sort. Rather only such facts as may be deemed requisite to our present study will be selected, in order that a historical perspective may be ensured. Such a historical perspective, however, involves us in the very beginning with technicalities which it would be useless to pursue if the premises are inadmissible, and hence our first task will be devoted to the establishment of certain elementary principles lest these do not find acceptance later on ; and, in so doing, we build our foundation on what is common to all three of the above-mentioned psychological schools.

This study is intended to be in the main a psychological one ; and strictly speaking, no critique, other than psychological, would be relevant to the examination of a purely psychological theory. Not infrequently so evident a truth is ignored, and criticisms, physiological in their purport, are brought to bear on purely psychological hypotheses.

So obsessed are many scientific writers with the physiological basis of mind, that they rebel against any conception or description in mental terms of any process other than a conscious one. It is apparently their view that nothing occurs in the mind other than what occurs in consciousness, and that what is not conscious can only be described in some such terms as " cerebration " or " neural molecular activity ".

They do not see that psychological happenings require psychological explanations, and that a physiological explanation is no explanation at all.

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Jung has a sentence to the point on this matter, on the question of phantasy: "The demonstration of a physiological source of the phantasy is a mere condition of its existence, not a law of its nature. The law of phantasy as a psychological problem can only be a psychological law" (1). The chain of conscious events is incomplete without its unconscious links. Even where we are conscious of the premises we start from, and are aware of the conclusions arrived at, we are not aware of the intermediate process. "The unremembered past experience is not dead, but alive and active below the level of consciousness. In the debating chamber of the present, it may not speak, but it votes, and its silent vote is often decisive" (2). Freud is unconcerned whether the Unconscious be regarded as mental or physical. He merely states that he is forced to describe such processes in mental terms, as there is no other possible way to describe them. So the hypothesis of a psychological unconscious is forced upon us. In Aveling's words, "The Unconscious is a psychological hypothesis postulated in order to explain the facts of consciousness and subconsciousness in purely mental terms. The hypothesis is necessary if psychology is to be an explanatory science" (3).

"If we must assume persistent traces of some kind", says Mitchell, "it is better, if only on methodological grounds, to ascribe them to the mind rather than the brain, and the reasons for doing so are more cogent when we are dealing with the data of psycho-analysis . . . the hypothesis of brain traces would seem to suggest that when these are not implicated in any conscious mental event or process, they are entirely passive" (4).

Jung's own attitude to the respective provinces of physiology and psychology is thus defined: "But since we are convinced", he says, "that the unconscious processes belong to psychology and not merely as substratum processes to the physiology of the brain, we are forced to place our concept of energy on a broader basis. We fully agree with Wundt that there are dimly conscious things. We assume, as he does, a clarity-scale for conscious contents. But the psyche does not cease for us where black begins, but is continued into regions that are wholly unconscious. Moreover we leave brain physiology its share, since we assume that the unconscious functions go over into the substratum processes, to which no psychical quality can be assigned except in the way of a philosophical hypothesis of pan-psychism" (5).

The acceptance of the hypothesis of the Unconscious will, however, largely depend upon what that hypothesis entails, and it is just in this matter of interpretation of its phenomena that such a sharp cleavage of opinion is to be found. With regard to the extent and nature and significance of the Unconscious, Jung's views differ profoundly from those held by Freud. In this, we shall follow Jung's interpretation. We shall therefore agree to accept the concept of an Unconscious extending beyond that of a purely personal one, to embrace racial memories and primordial images "the deepest, most ancient and most universal thoughts of humanity". This hypothesis of a

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collective Unconscious would seem to be rather an extension than a contradiction of Freud's theory. Jung regards primitive man as a person in whom the mental function is essentially collective. Being almost entirely identified with the collective psyche, he suffers no inner conflict. His virtues and vices are collective, and there is no inner conflict until the personal development of the mind reveals its presence. And the illustrations which Jung offers of the utterances of certain dementia præcox cases would seem to demand no less an hypothesis. We shall also accept Jung's view that the personal unconscious does not merely comprise infantile wish-tendencies which have undergone repression, but that besides repressed material it consists of what has been forgotten and what has been subliminally perceived, thought and felt. In this lack of recognition of certain psychological functions by reason of incompatibility of the conscious attitude and their consequent mal-development, we see the first glimmerings of what was afterwards to form so substantial a part of Jung's theory of psychological types.

The stress laid by Freud on the exclusively psycho-sexual motivation of neurotic symptoms, found its counterpart in the persistence with which Adler traced the same symptoms to manifestations of superiority on the part of the ego. The incompatibility of the Freudian and Adlerian theories caused Jung ultimately to attain a standpoint which he believed to be " superordinate to both ". Both theories appeared to him to contain truths not necessarily mutually exclusive. To Jung, it seemed that Freud emphasized only objective values as aiding or thwarting the desires of the subject, whilst Adler laid emphasis on subjective values. To him the subject was of supreme importance, always and at all costs seeking its own supremacy. Jung did not regard these differences as necessarily opposed, so long as they were merely technical methods of treatment ; but as theories they seemed fundamentally opposed, and this opposition he regarded as evidence of two different types of mind. And so the technical contrast which he had already envisaged between two mental disorders, hysteria and dementia præcox, with regard to the libido movement found further substantiation in the antagonistic views of Freud and Adler. Freud, the " extravert ", found the determining factor in the object. Adler, the " introvert ", discovers it only in the subject. So in the attempted reconciliation of these apparently irreconcilable views, Jung found a further confirmation of his theory.

The contrast which Jung envisaged in the domain of mental pathology, with regard to the libido movement, was adumbrated by him in an address delivered at the Psycho-analytical Congress at Munich in 1913. The theory was presented to a select and specialized audience, but met with only a limited measure of recognition. It is true that technical psycho-analytical discoveries have become diffused amongst the public with astonishing rapidity ; but in this case Jung did deliberately present his type-theory to a larger audience. In his foreword to " Psychological Types " he tells us that he felt it incumbent

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upon him " to bring the experiences of the medical specialist out of the narrow professional limits into more general relations ; relations which will enable the educated lay mind to make use of the experiences of a specialized terrain ".

" I should never have ventured ", he adds, " to attempt this expansion, which might well be misunderstood as an encroachment upon other spheres, were I not convinced that the psychological points of view presented in this book are of wide significance and application, and are therefore better treated in a general connection than left in the form of a special scientific hypothesis " (6).

It will therefore be seen to be in conformity with the development of Jung's theory, that it should first of all be examined in its earliest formulation as a technical theory of libido movement explanatory of the phenomena of two forms of mental disorder, and then in its general connection as a theory of psychological types applicable to humanity at large.

I shall refer to these theories as Jung's " early theory " and " final theory " respectively. The latter is not perhaps an altogether suitable designation, inasmuch as Jung may quite possibly see fit to modify his views and transform his theories. He has said that classification of types according to extraversion and introversion must by no means be looked upon as the only possible method. Any other psychological criterion could be equally well employed. Only it appeared to him that no other possessed so great a practical utility.

" Nature knows two fundamentally different ways of adaptation which determine the further existence of the living organism, the one is by increased fertility, accompanied by a relatively small degree of defensive power and individual conservation ; the other is by individual equipment of manifold means of self-protection, coupled with a relatively insignificant fertility. This biological contrast seems not merely to be the analogue, but also the general foundation of our two psychological modes of adaptation. . . . On the one hand, I need only point to the peculiarity of the extravert which constantly urges him to spend and propagate himself in every way, and on the other, to the tendency of the introvert to defend himself from any expenditure of energy directly related to the object, thus consolidating for himself the most serene and impregnable position " (7).

To pursue the implications of this statement would prove a fascinating although somewhat perilous adventure. Fortunately such is not required, and could not contribute towards the elucidation of the type problem. The passage quoted does, however, allow the biologically orientated a glimpse of the foundations of the type theory as envisaged by the builder. Meanwhile, our concern is rather with the psychological superstructure.

Jung's Early Theory.

The core of Jung's early theory of psychological types, as indeed also of his later and final theory, is to be found in that sentence which McDougall

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professes to regard as the only illuminating and altogether acceptable statement on this topic (8): "Hysteria is characterized by a centrifugal tendency of the libido, whilst in dementia præcox its tendency is centripetal" (9).

This is a theory within a theory; a theory of contrasted pathological syndromes, and a theory of "libido" explanatory of the contrast.

Since libido movement is the essential hypothesis of this statement, Jung's conception of "libido" must be mentioned. For Freud, to whom we owe the word, libido means the force by means of which the sexual instinct achieves expression. Jung protests against so limited a conception. Libido for him represents the perceived manifestation of psychic energy, to be likened to the *élan vital* of Bergson; and the energy of the sexual instinct is merely one of its manifestations. Jung is at pains to contrast his "energic" standpoint with Freud's "dynamic" one. The differences would appear to be largely verbal. Freud, indeed, seems to have approximated more to Jung's wider conception. One can understand Jung's castigation of an attitude which would explain all higher manifestations as "nothing but" the operation of sexual forces; but I prefer to think that Freud does not so equate them, and that Jung does him less than justice in stating that his process of *reductio ad causam* is merely "an inept expression for the same old thing" (10).

These differences in the signification of "libido" are reflected in the meaning which each ascribes to the term "introversion". The sense in which Jung uses this word which he himself coined is already apparent. For Freud, the word denotes "the deflection of the libido away from the possibilities of real satisfaction and its excessive accumulation upon phantasies" (11).

Freud envisages a conflict between ego and sex, interest and libido. These two undergo development side by side. The ego strives to adapt itself to the libido development, or to adapt the libido development to itself. If the libido development does not proceed harmoniously with that of the ego, it will either be refused recognition, and so fall under repression, or it will achieve recognition and so undergo "sublimation".

Freud does not anywhere deal with "introvert" as opposed to "extravert" tendencies, but Miss Ikin has shown how such might be regarded from the Freudian angle: "Where ego instincts have repressed the sex instincts, the conscious reaction is introvert. If the ego fails to repress or utilize its libido in sublimated channels, then the object libido moulds the ego, depletes the ego, and adaptation is through feeling, the conscious reaction being extravert" (12).

It is the third possibility which Miss Ikin refers to that is of special significance, *i.e.*, where interest and libido are harmonized, where both introvert and extravert reactions will be in consciousness and come into play according to the needs of the situation. The dual play and harmonious co-operation of these two mechanisms will be commented on at a later stage. Meanwhile, the sharp divergencies of Jung's teaching from Freud's in this respect must be

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noted. For Jung, repression is of minor importance, and he does not explain the contents of the personal unconscious as occasioned thereby, but rather that they are the consequence of a disproportionate mental development whereby certain potentialities are neglected in favour of others, and the neglected functions tend to become unconscious.

"It is well known", says Jung, "that in their general physiognomy, hysteria and dementia præcox present a striking contrast, which is seen particularly in the attitude of the sufferers towards the external world. The reactions provoked in the hysteric surpass the normal level of intensity of feeling, whilst this level is not reached at all by the precocious dement. The picture presented by these contrasted illnesses is one of exaggerated emotivity in the one, and extreme apathy in the other, with regard to the environment" (13).

This contrast is one which the Freudian school have clearly recognized. Only of necessity their explanation of it, being in accordance with the particular sense in which the term "libido" is construed, differs widely from that of Jung. Abraham (14), writing from the Freudian standpoint, remarks that the dementia præcox case lacks the capacity of transferring libido to the external world, and in this way is fundamentally different from the hysteric.

The Freudian viewpoint on this matter is so dissimilar from that which we shall adopt that a further comparison between these two schools of thought must be abandoned. Jung deals with this pathological-type antithesis as illustrative of the presence or absence of the psychological function of feeling, and the presence or absence of this function he ascribes to the nature of the general attitude.

Feeling is the fundamental distinguishing function, and its presence or absence becomes the criterion of type differences; and so it came about that when Jung gave his theory its wider application, in the belief that normal persons were likewise characterized by the relative predominance of one or other of the two mechanisms—extraversion and introversion—he portrayed the extravert type as that in which the fundamental function was feeling, and the introvert type as that in which thought occupied the foremost place.

> "The one feels his way into the object, the other thinks about it. The one adapts himself to his surroundings by feeling, thinking coming later; whilst the other adapts himself by means of thought preceded by understanding" (15).

At this point, and before proceeding to examine the psychological characteristics of hysteria and dementia præcox and to inquire into the validity of their contrast in terms of libido movement, it may be well to make clear certain difficulties in this early theory of Jung's. The presence or absence of feeling is the criterion of this type difference—that is to say, the presence or absence of its expression. An excess of feeling-expression is the mark of the extravert, a deficiency the mark of the introvert. The criterion is quantitative, not qualitative. Can a quantitative theory reckon sufficiently

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with qualitative differences? That there are qualitative differences between the feeling of the normal extravert and that of the hysteric cannot be in doubt.

Hysteria and Dementia Præcox.

Hysteria.

Let us confine our attention for the present to the psychological phenomena of hysteria. All recent investigation has supported Charcot's statement that hysteria is a psychological disease *par excellence*. In searching for the chief psychological characteristics of hysteria, we can have no surer guide than Kretschmer, whose brilliant monograph on this subject is singularly free from unwarranted assumptions. The first point to be stressed is the type of person in whom hysteria is manifested. Clinical experience bears out Kretschmer's assertion "that hysterical manifestations are predominantly vague, impulsive ways of reaction occurring in simple, primitive or immature persons, and appear relatively seldom in enigmatic, highly differentiated personalities possessing intricate richness of experience" (16).

These psychic manifestations are described as resulting from a tense diffuse affective condition, and Kretschmer compares them with the subjective state of affairs in consciousness during the activity of a human instinct, *i.e.*, "a diffuse, idea-poor, affective condition". Many symptoms of what are called the "hysterical character" are "nothing more than stationary residuals of an early pubertal psyche or unfavourable characterological modifications of the same under the changed demands of later life". Such an immature psyche necessarily shows a greater tendency towards impulsive discharges of affect.

Now Jung has stressed the exaggerated emotivity of the hysteric. He has not called attention to the immaturity of the intellectual powers. He has therefore not chosen to differentiate between the type of mind which shows marked affective reactions in conjunction with marked intellectual capacity, and the type in which this exaggeration of affect is accompanied by relatively undeveloped intellectual powers.

Klages' criticism of Jung is to this extent cogent. "We shall have to consider", he says, "whether it is a shallow or a deep life of the soul that by choice turns inwards. If we distinguish between the possibility of an excessive predominance of one or the other direction, then the consequences will vary greatly in the two cases" (17).

Is the hysterical character, as Jung considers it to be, an exaggeration of the normal extraverted attitude? The statement is equivocal inasmuch as the normal extraverted attitude has been deduced from the nature of the hysterical phenomena. I am prepared to regard hysteria as implying an extraversion, a special kind of extraversion, not merely an exaggeration of Jung's original extraverted attitude, but one of "feeling" extraversion modified

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largely by the fact that the intellectual functions are largely undeveloped, and by no means as being wholly explained thereby. The statement that the intellectual powers in the hysteric are immature may be challenged, and cases cited to the contrary. None the less, I agree with Kretschmer in this matter, and with Dubois, who says, " the hysterical patient is not as a rule truly intelligent . . . such patients have only partial intelligence ; they have not the robust good sense which one often finds in uncultured persons . . . a true savant or intellectual man might be neurasthenic ; he would never be an out-and-out hysteric " (18).

Excess of emotional expression may commonly enough be encountered in hysterics, but hysteria is not merely exaggerated emotivity. I can even agree that the statement which McDougall so heartily endorses with regard to the centrifugal libido movement in the hysteric is very largely true. But it has not been accepted by all Jung's disciples. Dr. Beatrice Hinkle, in her study of psychological types, is in agreement with Jung in her definition of extraverts and introverts, which, however, she subdivides differently, but she considers that the hysterical neuroses are found in their pure state chiefly amongst the extravert and emotional introvert types.

With regard to the latter, she writes :

" They are essentially introverts, but it is as though, in them, the emotions and feelings have escaped from the domination of the thought function, or have refused to be subjected to its dominion, so that they too often express themselves immediately in action and respond to contact with objects . . . closer study and comparison with the quality of the feeling reactions of the extravert, however, will soon reveal a marked difference in the character of the emotional introvert. A certain lack of differentiation, a too great intensity and over-emphasis, insufficient discrimination, an uncertainty in its expression, and a tendency to one extreme or another serve to distinguish its character from that of the extraverted type. Further, the feeling is never steady and dependable, for it is constantly interfered with in its relation to the object by the subject which always presses in between " (19).

Apparently, therefore, the distinction between what is called extraversion and introversion is one that has to be finely drawn, and the presence of either mechanism, even in so pronounced a type as an hysteric, is not by any means easy of ascertainment. I think that Jung would probably say that Dr. Hinkle has been more perceptive than judging in her assessment of that type where feeling is interfered with by the interposition of the subject. I can picture just the sort of patient Dr. Hinkle has in mind ; but her departure from Jung's teaching on this matter is apparently due to mistaking unconscious attributes for the manifestations of the conscious attitude.

Personally, I am content to accept the view that hysteria is characterized amongst other things by a libido extraversion. The predominatingly extraverted attitude of the hysteric need not be questioned. The exaggerated *rapport* manifested in their social activities and the frequency of hysterical contagion are indubitable traits of hysterical subjects and of extraverts.

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This is not denied. What is denied is that the hysterical character is an exaggeration of the normal attitude, complicated by compensatory reactions from the side of the unconscious which bring about an introversion of psychic energy.

Admittedly, also, there is ample evidence of the occurrence of introverted phases in the hysteric—phases during which the patient is wrapped up in her phantasies, and correspondingly loses all real touch with her environment.

These extraversion and introversion mechanisms occurring in hysteria have their correlate in the extraversion and introversion phases of the manic-depressive group, as we shall see. Both groups appear to belong to the category of extraverts, but the argument here is that their extraversion is a departure from the normal extraversion, and not merely an intensification of it. They are the product of an unknown factor acting on the extraverted character. The extraverted character may be presumed to be a condition for the existence of X ; but it is X and not the extraverted character that gives these diseases their uniqueness.

If hysteria be characterized by an extreme extraversion of libido, is the converse necessarily true ? Jung speaks of the hysterical character as an exaggeration of the normal extraverted attitude. If this were really so, then it would follow that the exaggeration of the normal extraverted attitude would result in hysteria, which is a proposition to which one cannot give assent.

In this matter I agree with McDougall, who says :

" Even the most extreme degrees in this scale must be regarded as compatible with health . . . the conduct of the extreme extravert may be rash and hasty, his emotions violent and uncontrolled ; but he remains, nevertheless, within the range of the normal. The correlation of the extremer types with functional disorder . . . is due to the special susceptibility of these types to such disorders, and should not lead us to regard the temperamental extremes as themselves forms of disorder " (20).

This " special susceptibility " may not be altogether enlightening, but it appears to me to be true. I believe it to be partly, but only partly, accounted for by the association of an affect excess with intellectual immaturity. Numerous illustrations might be given of this. A patient I have in mind had tormented her family for years by her hysterical tantrums. Peace could only be had by giving in to her, and this her father at least never failed to do. Serious trouble began when she had to quit the paternal home. As a hospital nurse her fabrications set the place by the ears. Finally, an attack on an associate, the outcome of an intense jealousy, necessitated her admission to a psychopathic clinic. What was not at first obvious was later quite apparent. She was a high-grade mental defective ; and it was to her intellectual inferiority that I largely ascribe her hysterical behaviour.

One might pre-suppose the operation of some hypothetical extraverting factor operating on a type peculiarly susceptible on account of its already

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innate extraversion. At this stage it does not seem necessary to assume, as McDougall does, the existence of any such factor. I am content to regard hysteria as the reaction of a type characterized by the combination of a special sort of exaggerated emotivity with intellectual immaturity. This helps to explain its common occurrence amongst mentally defective and epileptic patients, and, in addition, in those of more mature development in whom, none the less, the inability to survey adequately and to think out a solution of the problems which confront them leads to the panic-like reaction so characteristic of this disorder.

It follows from what has been said that a true introvert cannot develop hysteria. In this I am in entire agreement with Jung, but just what constitutes a true introvert will be found to be a matter of extreme difficulty of ascertainment.

One need not, of course, expect to find in types a clear-cut demarcation. "The important idea about a type", Kretschmer reminds us, "is that it possesses a firm centre, but not hard and fast boundaries. Types, as a rule, can only be determined intrinsically; we cannot mark their boundaries. By "type" we mean a "nucleus" of more distinct, and among themselves quite similar, formations which have been deliberately lifted out from a sea of progressive transitions. This holds good for an anthropological type as well as a personality type, or a clinical reaction type. We should not, therefore, desire sharply to limit the hysterical reaction type by means of definitions, otherwise one will always cut through something alive" (21).

Dementia Præcox.

Owing to its fatalistic therapeutic implications, the appellation "dementia præcox" has fast been losing favour with psychiatrists. The term "schizophrenia" has been adopted in its place, and with the rechristening there has been an enlargement of the diagnostic boundaries, but the psychological reactions are the same. It was Bleuler who first showed that one of the chief characteristics of this disease was a splitting of the psychic functions, and who further demonstrated the presence of schizoid tendences in everyone. The schizoid type is described as withdrawn, secluded, and not in normal affective *rapport* with the environment.

The typical emotional state of the schizophrenic has long been described as one of apathy. Investigation of such patients shows, however, that this apathy is more a matter of impression than an accurate assessment of their inner experience. Brill recounts the case of a schizoid patient who suddenly heard that his child had died. He apparently showed no "affect" whatever, but about a month later fell into a deep depression. This is illustrative of the displacement of feeling which occurs along with the outward indifference so characteristic of these cases (22).

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Jung reminds us that the introvert can feel very deeply indeed: "the emotion is there but it all remains inside, and the more passionate and deeper his feeling is, the quieter is his outward demeanour" (23).

Jung is here speaking of the type which he later designated the "introverted feeling" type.

The loss of the natural and spontaneous affective contact with the environment may be accepted as the most insignificant feature of this disorder, amongst a great variety of other symptoms.

What are we to say with regard to the theory that schizophrenia is the evolution of a definite type? That a particular type, the "shut-in" type, is peculiarly liable to develop it, seems evident, even although Hoch has been able to trace the existence of this type only in 51% to 60% of cases.

It is difficult to obtain accurate histories, but there is little doubt that the sufferer from dementia præcox has been from childhood a seclusive, shut-in type. Where one can depend upon the information, it is generally something like this—the history is one of a typical hebephrenic girl: "Even as a baby she was different from other children, always preferring to be alone. In everything she had to do she had to be coaxed. She never wanted to join other children in their play. She always came straight home from school, and was happiest at home and with her books. She was very shy".

Schizophrenia does not, however, appear to be the inevitable outcome of a libido introversion. If we were to admit that under a given set of circumstances acting as psychical traumata, bereavement, difficult home surroundings, harsh treatment, masturbation and the like, such a type would develop schizophrenia, we should be admitting that the disease consisted merely of an extreme type reaction to experiential factors. But schizophrenia with its multifarious variegation of symptomatology is a far cry from a fully developed schizoid. Little enough is known about the pathology of this condition; and if, as is not unlikely, it were shown that there were some causative germ for its production, or a toxic process or some inborn error of metabolism, or even, as has been suggested, an endocrine deficiency, then there would be a non-psychological characteristic imposed upon it from without, accentuating and distorting the psychological characteristics from within. A psychosis, in so far as it is organically conditioned, may so put its impress on a case as to make it well-nigh impossible to see the individual reaction type below and beyond it.

But even if this were not so, and if it be said that a psychological picture demands its own psychological interpretation which Jung would advance in terms of the outcropping of the collective unconscious, then it must be argued similarly as regards hysterics, that a profound introversion does not necessarily lead to the development of dementia præcox. Here again one cannot deny the presence of introversion, but the introversion is of a peculiar kind—a divagation from normal introversion, not merely an exaggeration of it. Since schizophrenia is not to be regarded as the natural evolution of a type, where

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must we look for the extra causative factor which operates on a peculiarly susceptible introvert ? I am inclined to find this in an organically conditioned lack of reserve psychical " potential ", and this deficiency is no necessary characteristic of the normal introvert.

There are patients, typically schizophrenic, whom I know, who illustrate this. A young woman, as classical a case of dementia præcox as one could wish to meet, wrapped up perpetually in her phantasies, and almost totally unconcerned with her environment, had always been, according to her parents, abnormally reserved and uncommunicative. Her early development, however, was so gravely retarded, she was so late in speaking and walking, that for a time mental deficiency was feared ; but once development began it was rapid, and she was well abreast of her associates at school. Then, at nineteen, she became depressed and " peculiar ", talking nonsensically, and showing the typical emotional incongruity. It is difficult not to see in this case an initial deficiency of psychical energy, compensated by a " spurt " which gradually faded with a falling psychical potential, so that the kinetic drive diminished to vanishing point as far as *rapprochement* with her environment was concerned.

I have seen several præcox cases occurring in brighter members of an otherwise mentally backward family. I have seen in such cases a discrepancy between ambition and capacity during school and college days, giving one the impression that such persons were " all out " in their endeavours as compared with classmates possessed of adequate reserves, and therefore with a high capacity-to-output quotient.

One can readily see the cogency of the Adlerian conception of inferiority here ; the reservoir of psychical energy is of insufficient capacity for the outflow proceeding from it, with consequent striving to compensate a deficiency.

It would seem to me, therefore, that introversion *qua* introversion is insufficient to account for a fully developed schizophrenia. It merely constitutes a liability. An additional factor or factors are necessary for its full development. Such a predisposing or precipitating factor may, perhaps, be found in some inherent insufficiency of psychical " potential " or in some superadded pathological process.

I agree with Jung that the tendency of the libido in such cases is centripetal, *i. e.* introverted. I do not regard this introversion, however, as being explanatory of the disease. Jung describes the " tendency " of the libido. I wish to add to that, the concept of " depth " or " quantity ". When these are considered together, a fuller understanding of the regressive phenomena is obtained.

If the question be asked, Can a true extravert develop dementia præcox ? the answer must be in the negative. Cases may indeed be instanced where schizophrenic symptoms appear in patients whom one might regard as extraverts, but I have become increasingly dubious of the accuracy of their early histories. However, such cases may be instanced. If it be the fact that true introversion should be manifested in early childhood, what are we to make

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of cases where the introverted disposition did not show itself until adolescence or even later? Was the true type obscured all the time, even to members of the patient's family, or are there introverted and extraverted phases normally occurring in all lives?

Here are two cases apparently contradictory to Jung's hypothesis: A nurse, æt. 31, when admitted to the hospital was nonchalant in manner and indifferent to everything around her. She had adopted a curiously affected style of speech. Her appetite had become more and more capricious, and finally she had refused food, believing that it contaminated her and made her do "irregular things". Ill-defined persecutory ideas developed. Emotional incongruity was marked, but definite hallucinations were not proven to exist. Such a reaction may unhesitatingly be accepted as schizophrenic, although the case cannot be regarded as one of classical dementia præcox. It is true that the patient had the reputation of being dreamy and abstracted and very reserved. These characteristics, however, were not observed before puberty. Prior to that time she is described as having been an energetic girl, interested in all sorts of activities, lively and companionable.

A similar difficulty arises in the other case, that of a young man, æt. 22, who is described as having been a natural, healthy boy, interested in sport, frolicsome, fond of the companionship of other boys, and in no sense shy or retiring. In late adolescence there was, according to his mother, a radical change in his demeanour. He began to lose interest in his surroundings, and in his friends. Soon it was evident that he was suffering from a serious mental illness. He began to speak of his home as the mystery house, where people listened-in and controlled his thoughts and made him say things that he had no intention of saying. He thinks he is the Unknown Warrior. He talks of a machine inside him making a whirring noise something like a clock. His food is poisoned and not fit for pigs. He must be X-rayed inside and outside. He has some awful disease. And in relating this, there is no evidence of real perturbation on account of such terrible happenings. On the contrary, he will repeat all such statements with a silly smile and appear more amused than otherwise. The delusional ideas and hallucinations and apathy have continued, and there can be no doubt that his case is one of the schizophrenic disorders.

Now it might be supposed that such a patient would have shown in early years the hallmarks of the introvert. On the contrary, all that we can glean from his family points in the other direction. If their account is to be relied upon, his boyish behaviour would place him in the extravert category.

I prefer to believe that in spite of the history one is dealing with an introverted type whose introversion was overlaid by a spurious extraversion. Jung warns us that under abnormal conditions children can be coerced into assuming a type which entails a violation of their individual disposition.

Other cases occur to one of married women in whom a toxic confusional

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state at childbirth precipitated a schizophrenic reaction. These patients seem to have been of the introverted type, but exceptions can again be shown. One patient is described by her husband as having been a leader in everything, quick to make friends, and with no trace of shyness, and this is borne out by her childhood history.

It would certainly seem that a rigid demarcation of types is not by any means always possible. The pathological instances would appear to show, more often than is admitted, the occurrence of mixed reactions.

Far apart as they are in their symptomatology and in their libido tendencies, hysteria and dementia præcox, in their symptoms which Kretschmer calls "hypoboulic" in the former and which are generally designated as catatonic states in the latter, have much in common. In contradistinction to the "purposive will", Kretschmer describes the "hypoboulic" will as resembling "a mysterious second-self which pushes its pale delicate brother into the foreground. In all small matters he apparently allows him precedence and a free hand. But with every decisive situation he presses the purposive will aside as a stupid phantom, and with one bound is in its place "(24).

Kretschmer admits that the whole process may be considered from the affective side, but this affect of the hysteric, he says, "is actually his will, and contains a striving, a resistance, a defence, a purpose "(25).

The mechanisms of the hypoboulic will and those of the catatonic states of schizophrenia may not be identical. They do, however, seem to represent in the former case a lower level adjustment due to lack of integration in a higher level response, *i.e.*, owing to intellectual immaturity; and in the latter case a similar lower level reaction on account of a lessening of the psychical potential necessary for an integrated, higher grade response.

Mania and Melancholia.

Hysteria and dementia præcox are avowedly the prototypes of libido extraversion and introversion respectively. Up to this point our argument has been directed towards showing that these mechanisms are of a special kind, and that extraversion and introversion do not solely suffice to explain the observed phenomena. It would seem that they are highly suitable pegs on which to hang a theory, but not adequate to support the theory in its more general application. We have seen that hysteria seldom, if ever, occurs in definitely introverted types. If schizophrenia appears to occur in extraverted types, this may possibly be explained by the patients' having assumed an extraverted attitude owing to the pressure of external events and in violation of their true type.

Jung speaks of extraversion and introversion as mechanisms, and of the preponderance of a mechanism as constituting an "attitude". Are we able to discover the operation of such mechanisms in other psychopathological

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states? It would appear so. Mania, in its milder manifestations (*e.g.*, hypomania), and melancholia illustrate mechanisms of extraversion and introversion, even though it may not be held that they constitute attitudes. Here again it is a case of a special kind of extraversion and introversion, but one worthy of consideration because of the similarity in many respects between mania and hysteria, and the quite common association of "depressed" with "apathetic" states.

Now the sufferer from simple mania, the hypomanic as he is called, would appear to illustrate just those qualities which are associated with extraversion. Such a patient will display a total absence of shyness. He is confident of his powers and full of self-assurance, and will talk on almost any subject with remarkable fluency. His associative processes are active and easy, and in keeping with the mental animation there is a perpetual restlessness and activity. The affective functions are specially involved. The patient is in a state of elation. He has little judgment and no self-awareness.

This condition of simple mania may precede, follow or alternate with states of melancholia, in which the picture is just the reverse of what has been drawn. The sufferer from mild melancholia is abnormally reflective and brooding. His own thoughts occupy him to such an extent that he can never act decisively, but always halts between two opinions. Contrary to the hypomanic, his associative processes are slow and laborious. It is difficult for him to think, and he has no spontaneity or initiative. It is again the affective functions that are involved. Instead of elation there is depression, and where the other is completely unaware of himself, the melancholic can never get away from his self-absorption and introspection.

At first sight it may appear unfortunate, as regards our present purpose, that Kretschmer's "cycloid" type, a type prone to manic-depressive illness, is contrasted by him with the schizoid who is liable to develop schizophrenia.

Mania is quite obviously an extraversion and melancholia an introversion; but this must not lead us into the error of regarding the melancholic as an introvert; and further study will show us that what contradiction there appears to be between the theories of Jung and Kretschmer in this respect is illusory, and based on a misapprehension of Jung's teaching. For first of all, we have to distinguish "mechanism" from "attitude", which it will be recalled Jung defines as the predominance of a mechanism.

The mania-melancholia contrast illustrates admirably the operation of opposing mechanisms, and were extraversion merely a mechanism, then all hypomanics would be extraverts and all melancholics introverts. But we know from clinical experience how closely interrelated these two disorders are, so closely united in one and the same person that few now deny the truth of the Kraepelinian teaching that they constitute phases of one disease—the manic-depressive psychosis. Now what is the prevailing attitude of such a sufferer when in phase of normality?

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Kretschmer (26) describes the temperamental characteristics recurring amongst manic-depressive cases as follows :

(1) Sociable, good-natured, friendly, genial.

(2) Cheerful, humorous, jolly, hasty.

(3) Quiet, calm, easily depressed, soft-hearted.

" The first group includes the fundamental marks of the cycloid temperament—the characteristics which recur everywhere from the hypomanic and the depressive poles and give tone to the cheerfulness as to the melancholy."

He points out that circular depressive patients actually complain of their lack of warmth, of kindly feeling for men and things, a sign that their feeling is their very life element ; and he goes on to add, " Side by side with the clearly sociable natures, we often find also circulars . . . people who take things rather to heart, who like to live their lives quietly and in contemplation. They may be differentiated from the corresponding schizoids in that there is no internal antipathy nor hostile turning-away from human society, but at most a certain melancholy, and occasionally a feeling of anxiety and a tendency to inferiority. If one seeks their company, they are friendly, natural and approachable "(27).

These observations by Kretschmer have been generally confirmed, but I may be allowed to allude to a further demonstration of their truth in an introversion-extraversion test carried out by Neymann and Kohlstedt (28). These observers noted that " depressions even when so deep as to form a slowing down of the entire psychomotor activity will give the typically extraverted responses ", and they add, " we were often surprised at the affirmative reply of patients who were so depressed that they would hardly talk, to the question, 'Do you like to take an active part in all conversations going on around you?'"

The extraverted attitude of melancholics is thus in accordance with clinical experience, and substantiates the truth of the opposed categories of cycloids and schizoids, and a broad general relationship between these and the extraverts and introverts of Jung. Indeed the psychological contrast of the cycloids with the schizoids makes a readier appeal to practical experience than Jung's comparison of the hysteric with the precocious dement. Quite apart from its correlation with physical types, Kretschmer's theory does not embroil us in the abstract perplexities of libido movement, and its ascertainment is far from difficult.

Of course there are many matters left unexplained, not the least of which is the case of the constitutional depressive. Of them, Kretschmer reminds us that " it is important to notice that one does not find constitutional depressives nearly so often in the region of manic-depressive insanity. One could collect a superb series of typically hypomanic temperaments out of our circular material, far more easily than a correspondingly large group of constitutional depressives "(29).

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To return a moment to the manic and melancholic states as indicative of mechanisms. If one keeps clearly in mind this distinction between attitude and mechanism, there need be no confusion such as might lead us to regard these states as illustrative of extraversion and introversion proper, *i.e.*, as diagnostic of the extravert and the introvert.

Curiously enough, McCurdy regards the manic states as indicative of an introversion. In that mine of psychopathological information, *The Psychology of the Emotions*, he describes how, in manic states, the attention tends to be turned from the environment to the patient's inner thoughts, and how a hypomanic case becomes more productive and emotional with an increase of absorption in his thoughts (30). One can see how introverted "absorbed" maniacs are, but in the mild degrees of mania, as in hypomania, the patient is surely orientated by and related to the object.

Jung was good enough to write to me on this matter, as follows:

"Mania and melancholia are the mechanisms of extraversion and introversion in a state of complete autonomy. In mania an almost limitless extraversion prevails on account of an uncontrolled release of psychical energy. In melancholia, an equally limitless introversion prevails on account of an almost complete compression of the production of psychical energy, but I think that extraversion and introversion are only symptomatic of a peculiar disturbance in the production of psychical energy. In both diseases the peculiar behaviour of the psychical energy seems to be the essential point, while the extraverted and introverted aspects are merely secondary."

This passage clarifies the discussion, although I cannot regard the last sentence of it as being altogether enlightening. One might accept Jung's dictum of the peculiarity of the behaviour of the psychical energy in mania and melancholia, but why not also in hysteria and dementia præcox? As to the extraverted and introverted aspects being secondary in the manic-depressive syndrome, I am in agreement.

I have often wished that Jung had envisaged and worked out his theory in terms of a manic-depressive dementia præcox contrast, but it is not my purpose to examine the relationship of Jung's and Kretschmer's theories, except in so far as this is relevant to the present inquiry.

But by no means have we explored all the numerous by-paths opening out of the way we have pursued. Granted that the manic is an extravert, and mania an extraversion; and granted that the melancholic is an extravert, but melancholia an introversion. It is none the less notorious that a number of manic-depressive cases show pronounced schizophrenic reactions. Involutional melancholics manifest such traits as often as not. It would be logical to trace the melancholic or maniac part of the syndrome back to an extravert type and the schizophrenic part to an introverted type. And, as we shall see later, there are many persons who make use of these mechanisms to such an extent that their type is inclusive of both categories.

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Validity of Jung's Early Theory.

By Jung's early theory is meant that generalization which he propounded with regard to humanity at large, that people belonged to either one or other of two psychological categories, that they were either extraverts or introverts, according as they made preferential use of one or the other of the mechanisms of extraversion or introversion, in their dealings with life.

We have seen that the origin of this theory lay in the contrasted pathological syndromes of hysteria and dementia præcox, the contrast being depicted by Jung in terms of libido movement. So far our observations on this theory have been confined to an inquiry into the validity of that contrast.

Definite conclusions have been reached as regards the appositeness of the contrast drawn between these two disorders. We have, however, attempted to show that there is no reason why we should accept hysteria as the prototype of extraversion (or, to be more exact, the hysteric as the prototype of the extravert) or dementia præcox as the original of introversion. The manics (and they may be taken to coincide with the manic-depressive group) have every bit as much entitlement to be regarded as the true exponents of the extraverted type. Perhaps a different theory would have been arrived at if this group had been contrasted with the schizophrenics. However that may be, Jung has described the extraversion of the former as " peculiar ". Equally well can the adjective be used to describe the extraversion of the hysteric or the introversion of the precocious dement. The contrast which Jung has portrayed as existing between hysteria and dementia præcox is a perfectly legitimate one ; but in our opinion the particular quality of either of these disorders is not wholly accounted for in terms of libido movement.

One can legitimately contrast extraversion with introversion, but one cannot contrast intellectual inferiority (which we have said was a stigma of the hysteric) with " lack of psychical potential " (from which præcox cases suffer). These are not in the same universe of discourse, and so allow of no comparison. If the contrast which Jung has portrayed is a valid one, it is valid only in so far as he is concerned with extravert and introvert phenomena as they occur in these disorders. But these phenomena do not exhaust the clinical picture by any means. The contrast depicted by Jung makes us suspect that he is excluding certain pathological features of these states from his mind and that he is forcing his theory on the facts.

The theory must be made to fit the phenomena, *i.e.*, account for their presence and their quality. To my mind, it leaves many facts unexplained. But a pathological basis for a universally applicable theory, although insecure in its own sphere, may well wear a different aspect in its extended application. It requires, therefore, that it should be tested out on a larger, more diverse and more normal population, and in this process of testing out

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we shall have recourse to the many writers who have made human character their study. In critical and biographical literature and in the study of fiction numerous examples illustrative of Jung's theory will be found.

But before doing so, it will be well to summarize briefly just what Jung's extended application of his theory amounts to. All human beings, according to Jung, are orientated by a general attitude of extraversion or introversion, and because of this, psychology requires two utterly different orientations. The extravert type gives to the object an unquestioned supremacy. The introvert type prefers to seek a higher value in the subject. A pure type making use solely of one mechanism never occurs. In the most one-sided types there are always fluctuations towards the other attitude than that by which the person is predominatingly orientated. The typical attitude thus indicates merely the relative predominance of one mechanism.

However remiss the professional psychologist has been in his attitude towards Jung's type theory, there has been something approaching enthusiasm in the acceptance of it, at any rate in its broad formulation, by numerous authors and critics.

The re-interpretation into modern psychological language of these lines from Hazlitt may serve as one illustration out of many.

> " Humour is the describing the ludicrous as it is in itself ; wit is the exposing it, by comparing or contrasting it with something else. Humour is, as it were the growth of nature and accident ; wit is the product of art and fancy. Humour, as it is shown in books, is an imitation of the natural or acquired absurdities of mankind, of the ludicrous in accident, situation and character ; that absurdity by some sudden and unexpected likeness or opposition of one thing to another which sets off the quality we laugh at or despise in a still more contemptible or striking point of view " (31).

The commentator adds a modern nuance to these words by showing how aptly they fit in with these distinctions in human personality which Jung has portrayed:

> " Humour is descriptive, external, accidental, imitative—that is, an objective faculty. Wit is introspective, comparative, analytical—that is, a subjective faculty. And the exercise of these faculties is appropriate to temperaments that correspond—to the objective man, or extravert, in the one case ; to the subjective man, or introvert, in the other case."

It seems a little surprising that a theory so technical and so specialized should have come to have so wide a currency. That it has been so swiftly commandeered by many writers is a sign of its appositeness and of its value.

The sweep of Jung's imaginative vision is nowhere better demonstrated than in his application of the theory of contrasted psychological types to humanity at large. His subject-matter, ranging from the psychology of the classical age down to modern philosophy, embraces the fundamental theological and historical beliefs which have cleft asunder churches, and rent nations into

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warring factions. The Christian acceptance which led Tertullian to make the *sacrificium intellectus*, but which contrariwise caused Origen to make the *sacrificium phalli;* the Ebionitic creed of a purely human Christ as against the Docetic belief in a purely Divine One; the belief in transubstantiation which has proved through the ages an interminable source of controversy; Classicism and Romanticism; Schiller and Goethe—all such fundamental oppositions of men and schools come within the ambit of Jung's transcendent intellect.

On this broad canvas Jung has delineated with consummate skill those subtle but profound differences in the mind of man which are the origin of unending strife.

It seems a far cry this, from the specialized theory of libido-tendency occurring in mental disorder; but Jung is concerned in proving the universality of his type contrasts, and it must be admitted that his thesis thereby becomes immeasurably strengthened.

Jung's Final Theory.

Very many writers, including writers of psychological works, ignore the fact that Jung made extensive alterations in his original, or as we have chosen to call it, his early theory. He found it impossible to identify the extravert with the "feeling" type, and the introvert with the "thinking" type. Moreover, he did not find that the classification of persons into one or other of the two "general attitude" types of extraversion and introversion led to any determination of their individual differences. In order to determine these he had recourse to the study of what he has termed "individual basic psychological functions." "For in the same measure as outer circumstances and inner disposition respectively promote a predominance of extraversion or introversion, they also favour the predominance of one definite basic function in the individual" (32).

Of such basic psychological functions Jung distinguishes four—those of thinking, feeling, sensation and intuition; and hence there are eight types in all, four "function" types, each of which may be extraverted or introverted.

It is at this point that McDougall signifies his dissent. In his *Outline of Abnormal Psychology*, McDougall states that he cannot follow Jung in this elaboration of types, nor can he agree that the four psychological functions of thinking, feeling, sensation and intuition can be validly distinguished and separated to the degree implied (33); and in a more recent publication he argues for the restriction of the terms "introversion" and "extraversion" to denote merely the various degrees of the freedom of outflow of affective excitement into action and expression (34).

It might be well to have terms to denote such temperamental differences;

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but to argue that the terms "introversion" and "extraversion" be so applied is to miss the essential meaning of the terms as defined by Jung, and to mistake a common accompaniment of an attitude for the attitude itself.

Jung has always regarded the relationship of the unconscious to the conscious as compensatory. Nor need this be controverted. Hence the unconscious of an extravert is introverted; and where one definite basic function predominates in the conscious, the other functions will be found to be in the service of the unconscious. Herein arise other possibilities of error in type discrimination. There is no essential, sharp demarcation between what is "conscious" and what is "unconscious". There is a constant interplay between these functions. Hence type diagnosis becomes a matter of the utmost delicacy. The observer's attitude has to be determined. Does a type become known to him by judgment or by perception? A man's unconscious may make a deeper impression upon us than his conscious attitude, and therefore it is necessary to know whether it is the "conscious" that has been judged or the "unconscious" that has been perceived. In addition, the attitude of the observed has to be ascertained. Is the particular reaction in question the product of his conscious or his unconscious psychology? Moreover, each type shows a special tendency towards correction of its one-sidedness, so that its true nature may be almost impossible to decipher.

The above *résumé* of Jung's more fully elaborated theory will suffice to show the complexity of the subject, and the aspects of it which call for examination. It would seem best to adopt the plan which Jung has followed, and discuss first of all the "general attitude" types and then the relationship of attitude to function, and such as exists between the several functions themselves.

The General Attitude Types.

What is not a little disconcerting is to find in psychological literature one and the same individual described as an extravert by some, and as an introvert by others. Darwin is instanced by Jung as a typical "thinking extravert". McDougall claims Darwin as an introvert, and adduces in illustration of this his great susceptibility to neurasthenic disorder (35). McDougall's avoidance of the issues raised by Jung's final statement of his theory as it appears in *Psychological Types* has led him into this contrariety of opinion. Much of his criticism in the article above referred to consequently misfires. It is possible to be subjectively orientated in the study of objective life; but there is no evidence of Darwin's subjective orientation. A "thinking" type he certainly was, and knew himself to be, and indeed he lamented the poverty of the development of his æsthetic sensibilities which his thinking processes had crowded out of his conscious attitude; but he was not a "thinking introvert", and it is just the consideration of such a case as Darwin's that makes us see

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how necessary it was that Jung should have had to abandon the identification of the " thinking " type with the introvert type.

And quite obviously, the fact that Freud has shown an intense interest in the inner life of man does not prevent his being regarded as an extravert. It is the kind of interest that is shown that matters. It is possible to be objectively orientated even in the study of the inner life.

As to the general attitude, this should arise from an innate disposition. " The decisive factor must be looked for in the disposition of the child " (36). It would be necessary to trace extraversion and introversion and affective experience in early childhood, taking hereditary predisposition as a basis. Such an examination does reveal the presence of two different attitudes towards life, one of immediate acceptance and assurance, the other with qualified acceptance and at least a hint of personal reservation and withdrawal.

I think that it cannot be denied that such typical differences do manifest themselves from the earliest moments of life, even, if it may be so expressed, " anterior to psychology ". The extraverted child displays a quick outward reaction, and although he may be sensitive, and not blind to his own mental operations at times, his outlook is preponderatingly objective. For him an object is an object. The introverted child is noticeably more shy, almost perhaps as quickly observant as the extraverted, but less liable to communicate his observations. Also his acts are more unpredictable, and there is an unmistakable sense of something being held back. A very great deal is given to the outer world, but not everything. I have known such children show a marked tendency to regard their toys, and indeed any object with which they come in contact, as animate and so address them, and such an " animation " of objects tends to endure for many years, whereas it is at most a fleeting phase in the extraverted child. Jung has quoted the instance of a young introverted girl who had to know the name of every article of furniture in a room before she could be persuaded to walk round it, and I believe also that the coining of words is much more pronounced in such a type.

It would appear that the inner world does exercise a greater pull, and that some reassurance is required whereby the outer world must be propitiated.

What is to be selected as the criterion of extraversion and of introversion respectively ? We are told that the extravert maintains a positive relation to the object ; that his subjective attitude is orientated by and related to the object ; that he is open, sociable and serene ; that he thinks, feels, acts and lives so as to correspond with objective conditions ; that his interest and attention are primarily those of the immediate environment ; that the moral laws governing his action coincide with the generally valid moral view-point ; that his most highly differentiated psychological function has a constantly extraverted application.

It ought not to be difficult, with this catalogue to guide us, to single out the extraverted attitude type in life or literature. It may be considerably

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more difficult to pin down one characteristic which may be accepted as the criterion of the type, but in any case the distinction is, frequently enough, one requiring the most delicate discrimination.

" Dear Walter Scott and myself," says Coleridge, " were exact but harmonious opposites in this ; that every old ruin, hill, river and tree called up in his mind a host of historical or biographical associations, whereas for myself, notwithstanding Dr. Johnson, I believe I should walk over the plain of Marathon without taking more interest in it than in any other plain of similar features " (37). The inward-looking mind, concerned with thoughts and fancies streaming up from the unconscious, stands in singular contrast here to the outwardly directed, observantly interested attitude.

The psychology of Wordsworth is a further example of the difficulty of type diagnosis. Was Wordsworth an extravert or an introvert ? I can imagine either case being argued with an array of facts apparently incontrovertible. In much of what is said here, I am indebted to a recent brilliant critical study of the poet by Herbert Read (38).

No one will dispute the fact that Wordsworth was a Yorkshireman of pure northern stock, and that his psychological characteristics were those typical of the Norse strain. " Yorkshiremen," says his biographer, " are imaginative, like all northmen, but a matter-of-factness, a strong sense of objectivity, a faculty for vivid visualization, keep them from being profoundly mystical. The same qualities make them wary in their actions, and canny in their reckonings. But their most extraordinary characteristic . . . is their capacity for masking their emotions. It is not a question of suppression, nor of atrophy ; the normal feelings of the human being are present in more than their normal force, but banked up against this impenetrable reserve. . . . Wordsworth, as his sister Dorothy once said, was a man violent in affection. But it was necessary to affirm that fact. Outwardly he was cold, even hard. Inwardly he was all fire. Not even in his poetry, not even in the most inspired moments of his creative activity."

At this stage, where we are dealing with contrasted " general attitudes ", an examination of the psychological functions is not required ; but it may be said that Wordsworth's objectivity, his acute sensational awareness, might lead us to place him in the category of " sensation extravert ". But he had a magnificent intellect, and he had predominatingly a thinking orientation. At first sight the facts appear to give colour to the correctness of the diagnosis of a " thinking-sensation extravert ", with corresponding suppression of the functions of feeling and intuition. This indeed might seem to be Wordsworth's type did we not have contradictory evidence from the knowledge of his boyhood. In a note on the " Ode : Intimations of Immortality ", Wordsworth, referring to his childhood, says :

" It was not so much from the source of animal vivacity that my difficulty came, as from a sense of the indomitableness of the spirit within me. I used to

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brood over the stories of Enoch and Elijah, and almost to persuade myself that, whatever might become of others, I should be translated in something of the same way to heaven. With a feeling congenial to this, I was often unable to think of external things as having external existence, and I communed with all that I saw as something not apart from, but inherent in, my own immaterial nature. Many times while going to school have I grasped at a wall or tree to recall myself from this abyss of idealism to the reality."

Does this passage force us to the conclusion, which his biographer accepts, that in his boyhood Wordsworth had no active sympathy with external things, that his state of consciousness almost withdrew him from life, and that he therefore struggled to make the actual world as real as possible. I myself do not see why a normal extravert, should not pass through in boyhood a phase of introversion; but if we are to find the indices of type psychology in early life, then Wordsworth must unhesitatingly be named an introvert. Let us turn for a moment to Jung at this point:

"As a result of the ego's defective relation to the object . . . a compensatory relation to the object develops in the unconscious which makes itself felt in consciousness as an unconditional and irresistible tie to the object" (39).

Jung is discussing the attitude of the unconscious in introversion. Objects possess terrifying and even magical powers for the introvert, such as, indeed, Wordsworth has so graphically described in these lines from the Prelude:

". . . a huge peak, black and huge,
As if with voluntary power instinct
Upreared its head. I struck and struck again,
And growing still in stature, the grim shape
Towered up between me and the stars, and still,
For so it seemed, with purpose of its own
And measured motion like a living thing,
Strode after me."

This experience, for we cannot doubt that it was real, unnerved Wordsworth for many days. A darkness hung over his thoughts, and—

"No familiar shapes
Remained, no pleasant images of trees,
Of sea or sky, no colour of green fields;
But huge and mighty forms, that do not live
Like living men, moved slowly through the mind
By day, and were a trouble to my dreams."

I cannot think of a better corrective to an entire scepticism of Jung's theory than the task of studying Wordsworth's psychology as revealed by himself, and laying that study alongside Jung's description of the general attitude of consciousness and of the unconscious in the introverted type.

Introversion is described by Jung as a turning inwards of the libido, whereby a negative relation of subject to object is expressed. Everyone whose attitude is introverted thinks, feels and acts in a way that clearly demonstrates that

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the subject is the chief factor of motivation, while the object at most receives only a secondary value ; the introvert's attitude to the object is an abstracting one ; at bottom he is always facing the problem of how libido can be withdrawn from the object, as though an attempted ascendancy on the part of the object had to be continually frustrated. Furthermore, we are told that the introverted type is guided by that factor of perception and cognition which represents the receiving subjective disposition to the sense stimulus—that whereas the extraverted type refers pre-eminently to that which reaches him from the object, the introvert principally relies upon that which the outer impression constellates in the subject. " In an individual case of apperception the difference may, of course, be very delicate, but in the total psychological economy it is extremely noticeable, especially in the form of *reservation of the ego* " (40).

Perhaps these last four words crystallize as well as any one phrase the core of the introvert's attitude. A stimulus evokes no simple response, but seems to have penetrated to deeper levels, and there to have activated unconscious processes. It is his sense of relationship to things beyond his sense-perceptions that prevents a superficial response from the introvert. One might regard it as the imaginative clothing of the perception, as a process of projection of subjective contents into an object.

If Jung's meaning has been rightly apprehended, it would seem quite necessary that the extraverted and introverted types cannot be described from the affective side alone. If in any given case it is a question of attitude, then perception must be fully considered, and with it such other psychological functions as can be accepted as " basic ".

The differential diagnosis.—The more that Jung's type distinction is examined and analysed, the more elusive does its application become in any individual case. In accordance with Jung's teaching, it would appear that introversion or extraversion is innate. Environmental influences are not neglected, and are assumed to play an important part in the development of any given type ; but it is not uncommon to find a person passing as an introvert in whom the introversion seems purely the result of these outer circumstances, and whose innate temperamental leaning would be unhesitatingly described as extraverted. It is this distinction between the innate types and the subsequently developed ones that makes their ascertainment so difficult, but a word of caution is necessary here. By innate we mean prior in time. Is the prior in time necessarily fundamental ? Jung distinguishes between innate and artificially induced types. One may allow this, and yet hesitate to deny that there may be normal " general attitude " phases, so that, say, an introverted phase may be perfectly in accordance with the normal extravert's development.

Jung reminds us that the extraversion of the introvert is different from the extraversion of the extravert, and the introversion of the extravert different from the introversion of the introvert. Who is to say in any given instance

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whether an individual is really extraverted or "as though" extraverted? How is the differential diagnosis to be come by? Jung tells us that it is a difficult matter to discover to which type an individual belongs, especially if oneself is in question. "Judgment in relation to oneself is always extraordinarily clouded"(41). And yet, in his discussion of the extraverted rational types, he states that he bases his judgment, presumably as to their rationality, upon what the individual feels to be his conscious psychology, for he alone can know.

The Psychological Functions.

Jung tells us that no person is simply extraverted or introverted, but that he is so in the form of certain functions. This enables us to pursue the inquiry still further. Apparently the danger in ascertaining any given individual's type lies in the possibility of basing an estimate on that person's unconscious which has been intuitively apperceived.

Such apprehension of unconscious processes in another is surely not in need of verification. It is an everyday occurrence, but the matter will be discussed when intuitive processes are considered. It would seem, then, to be imperative to make a distinction between unconscious and conscious processes. In his "Psychological Types" Jung describes the "general attitude" of the unconscious in both types, but in a subsequent essay he states that there is no general attitude of the unconscious, but only typically modified forms of unconscious functions (42); and he goes on to warn us that one can scarcely speak of typical unconscious functions, and that no more should be asserted with regard to the unconscious than that it has a compensatory relation to the conscious.

According to Jung, the superior function is always the expression of the conscious personality, its aims, its will and its achievement. The line of inquiry must now be the nature of these functions, their inter-relationship, and their relationship with the general attitude, and also their activities when "inferior" and unconscious. Can the four basic psychological functions—thinking, feeling, sensation and intuition—as postulated by Jung, be accepted?

Jung divides his four basic functions into two groups, rational and irrational. Thinking and feeling belong to the former, and sensation and intuition to the latter, inasmuch as valuations result from the acts of the first two, whilst in sensation and intuition, no selection is said to be made by the judgment; they are grounded exclusively on experience. No selection is made by the judgment, truly enough, but neither of these two functions merely registers passively what is presented to them. There is an element of selection, and this unconscious selective process is the outcome of the general attitude.

It does not seem of importance to discuss the grouping of these functions into the rational and irrational.

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I propose to adopt Jung's classification of functions. They are already sufficiently recognized by psychologists. The inclusion of intuition might at first be thought doubtful; but intuition would seem to have a good right to a separate category. It cannot be classed as a type of sensation, for intuition accounts for many more "tacit functions" of ours than arranging beforehand what we shall see and what we shall omit to notice in any sudden presentation of complicated material, and thereby is entitled to an independent category.

It is sufficiently clear that certain functions tend to become predominant, in which event the others, by reason of neglect and lack of use, become untrained and undifferentiated and relatively unconscious.

Thinking.

Jung makes special mention of the antagonism of thinking to feeling, and of sensation to intuition. When an individual is ruled mainly by reflective thinking in his approach to life's situations, he will fail in his adaptation to circumstances if his thinking keeps his natural feeling response in abeyance. More and more he will judge matters by a preconceived rule of rationality afforded him by his thinking, and more and more will his feeling-judgment become suppressed. By reason of this neglect of feeling, various disturbances occur indicative of such repression. The unconscious feelings in the extraverted type, Jung describes as "highly personal and over-sensitive, giving rise to secret prejudices, as, for instance, a decided readiness to misconstrue any objective opposition to his formula, as personal ill-will "(43).

Dickens portrays for us an extreme example of such a type in Mr. Gradgrind in *Hard Times*. "Now what I want is facts," says Mr. Gradgrind. "Plant nothing else and root out everything else"; and Scrooge also, in *A Christmas Carol*, is a similar type with inferior repressed feelings until such time as his visitation by Marley's ghost brought about an abrupt alteration of the conscious attitude.

The thinking introvert is more difficult to understand. His ideas are largely independent of objective data. His remoteness from actuality is evidenced by the boldness of his thinking, which stands often enough in contrast to his fear when such ideas seem likely to materialize. We are told that in such a type there are repressed extravert feelings in the unconscious. In so far as the unconscious is compensatory one would look for tendencies towards extraversion and towards affective expression. The correction of an introverted thinking attitude would be an extraverted thinking attitude, and the correction of repressed feelings would be their expression. It is surely impossible to differentiate between unconscious thoughts and unconscious feelings in the way that Jung does. It is sufficiently difficult, often enough, to distinguish between a conscious thought and a conscious feeling. The distinction would

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seem to be best expressed by Dibblee: "So long as a connected group of compound sensations remain in our psychological time, they are feelings; but when we form any opinion about them other than a time modification, they are on the way to become thoughts "(44).

Feeling.

When one looks around for examples of the types which Jung portrays, one is immediately struck with the appositeness of his description of the feeling types, both extravert and introvert, at any rate as far as his description of their conscious psychology goes. It must be that such types preponderate. Ferrière gives the relative preponderance of types in children in Switzerland as 25% to 28% sensation types, 55% to 60% conventional, 10% to 12% intuitive, and 3% rational (45). His *type conventionel* corresponds largely with Jung's feeling extravert type, and its frequent occurrence accords with our experience. The extravert feeling type is characterized by its establishment of *rapport* with the environment through the medium of feeling. One is not impressed in such a type by any originality of thought. Thinking follows in the wake of feeling. These subjects' political views are largely the outcome of the standard generally accepted in their *milieu*, and it is the same with their views on religious matters and with artistic judgments. Nowhere better than in such types is Jung's view demonstrated that feeling is a valuation. It is easy to see how, owing to the predominance of such secondhand thinking, any real thinking that takes place, and would tend to reverse the general attitude, will be thrust out of awareness and relegated to the unconscious. Originally compensatory, the unconscious attitude becomes rebellious, and evidences of this are soon forthcoming. Owing to the ingress of pent-up unconscious thoughts, there is liable to be an abrupt change in the conscious estimation of the object. Whatever be the real nature of these manifestations, Jung terms them "thoughts". They seem, at any rate when rescued from the subconscious depth, to have such qualities as to allow them to be so styled.

The introverted feeling type is the original model of the introverted type and is to be found mainly in women, and again the picture is unmistakable. Such an individual, even from very early years, shows a reluctance to express her feelings. She is difficult of access, and seldom appreciated except by those who are really intimate with her, for it is an acknowledged characteristic of such a one that she should be genial and sympathetic only towards those who know her well, whilst to strangers she is withdrawn, and, so to speak, on the defensive. Her passion is not expended in a wide diffuseness, but runs in a deep-cut channel.

So far the description will be agreed on. It is the unconscious manifestations in such a type that are less readily understood. Jung states that it is unconscious thinking that is repressed. This is said to be projected and

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" consciousness begins to feel what others think ". That such a type is unusually sensitive, often hypercritical, and tends to believe itself maligned by its neighbours, may be accepted as true ; but I have to confess myself unable to discern in such an attitude the operation of unconscious thoughts. The feeling introvert is fully aware of the difficulty of *rapprochement*, and is a different being in congenial company. There she blossoms out, and it would seem that it is the expression of feeling and not of thinking that is required. Moreover, the feeling introvert is infinitely more reflective than the feeling extravert.

Sensation.

Jung's sensation types have always appeared to me to be too abstract. The extravert sensation type has much in common with the feeling extravert in living for the moment. It is a type characterized by absence of reflection. The acuity of the senses and his guidance by what is sensed are his chief characteristics, but I am not sure that the negative qualities do not more largely account for the special features exhibited. Many of the qualities enumerated by Jung are rather to be explained by the lack of thinking than by the predominance of sensation, *e.g.*, the credulity which such a type generally displays. It is not to be expected that a well-marked sensation extravert should be able to accommodate himself to an experience which engenders a spiritual outlook. In the face of sorrow a " magical " religiosity may develop. To Jung this would be an indication of the emergence of repressed intuition. It would, in any case, seem to be as much due to the inferiority of the conscious thinking as to the predominance of the function of conscious sensation.

According to Jung, sensation can be said to have a conscious function only in so far as the rational attitude of consciousness permits accidental perceptions to become conscious contents. One would rather say that it is the interests which determine what objects are attended to, and what ignored ; and where the interests are such as engender a thinking which need rise little above the perceptual level, rational conceptual thinking falls in abeyance.

Nor do I feel convinced that sensation need always stand in diametrical opposition to intuition. Sensation, Jung states, " disturbs intuition's clear, unbiased, naïve awareness with its importunate sensuous stimuli ". Jung would seem to be including feeling along with sensation when he says this. One may, however, admit this, and even agree that these functions cannot work synchronously, but my observations make me believe that they do sometimes work in such rapidly alternating succession that for practical purposes they may be considered as blended together.

The consideration of introverted sensation is even more difficult. Once under the thraldom of Jung, one is apt to lose all touch with reality. His psychological penetration and his persuasiveness are such that the mind is held captive, entranced by the ingenuity of his schemata. I can sympathize,

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though I disagree with William Brown when he says, " If you fully agree with Jung you lose all sense of truth entirely "(46).

One must expect to be occasionally at sea when confronted with Jung's unique and colossal experience. It is not so much the nature of introverted sensation that is difficult to grasp, as the fine distinctions that are drawn between it and other functions. Its nature depends upon the undue prominence of this subjective factor in perception. One does not desire a painting to be merely photographically accurate. There must be vision, and in so far as there is vision, there is an unconscious projection of the artist's personality. It is the same with any other creative work. It is the nature of such vision, however, which I find it difficult to distinguish from an intuitive process. Probably Jung might regard it as a case of intuition availing itself of sensation. I would prefer not to believe that sensation and intuition are so opposed that they cannot blend and fuse under the synthesizing control of the creative faculty.

There is undeniable evidence of repressed contents in such a type. One has come across this " amazing flair for every ambiguous, gloomy, dirty and dangerous possibility in the background of reality ". Jung tells us that this is due to the presence of repressed extraverted intuition (47).

Intuition.

Jung's analytical genius is nowhere better revealed than in his description of intuition. This he defines as that psychological function which transmits perceptions in an unconscious way. It may appear in a subjective or an objective form ; the former is a perception of unconscious psychic facts, essentially subjective in origin ; the latter is a perception of facts which depend upon subliminal perceptions of the object, and upon thoughts and feelings occasioned thereby. Furthermore, Jung distinguishes the concrete and the abstract forms according to the degree in which sensation participates in the process, and of course also the extraverted and introverted applications of the intuitive function.

Putting psychological characteristics to one side, it would seem to be the cardinal feature of intuition that it is always on the search for possibilities rather than actualities, whether these possibilities lie in the objective situation or are the product of subjective imagery. Since this is so, the intuitive rebels against the closing down of possibilities. He must feel free and untrammelled, and able to exploit such chance situations as may appeal to him. Jung speaks of every actual situation as becoming a prison to the intuitive, burdening him like a chain, and prompting a compelling need for solution.

The following passage on Coleridge well illustrates this characteristic :

" This sublimely irresponsible creature could have no worse torture thrust upon him than the feeling of being bound by an undertaking. The thought of a

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duty to be fulfilled, or a task recurring regularly, cast a gloom over him and was enough to throw him into the clutch of a torment as paralysing as a remorse. He became a prey to unendurable anguish as soon as foreseen circumstances blocked out his future " (48).

The nature of intuition is obscure, but none the less quite unmistakable. Perhaps Jung's definition of it is too narrow. Jung speaks of intuition as availing itself of other functions, where one would prefer to regard these functions as capable of unconscious operation, and hence largely to be themselves regarded as intuitive. The unconscious elaboration of an intellectual problem may bring about a sudden solution surprising to the conscious mind, and may surely be described as intuitive, in which case one should speak of intuitive thinking. Jung speaks of intuition as presenting thought with material. Just as often, however, does thought present intuition with material for solution. Dibblee says :

" The problem of perceptive intuition not only offers us a good example of the elementary action of the mind during its performance of necessary but extra-conscious and unthanked work for its master, but it leads us much further. I believe that the extra-conscious work of the mind, that is to say, of the intuitive faculty generally, extends beyond mere acts of presentation. It is even possible . . . that presentations are not the most typical examples of that kind of extra-conscious thinking, which is of the essence of intuition " (49).

In the meantime, one may abide by Jung's definition and follow his description of the extravert and introvert intuitive types.

The extravert intuitive scents out the possibilities of a situation. He has a flair for recognizing just what sort of scheme will prove successful, and an uncanny power of bringing it to completion despite the warnings of his less gifted fellows. Largely his success depends on his instant apprehension of other people's natures and gifts. His arguments are persuasive, for they are based on his detection of chinks in his opponent's armour. He can arouse enthusiasm, and he is, as Jung says, " the natural advocate of every minority that holds the seed of future promise " (50). His too great reliance upon intuition constitutes his greatest danger. As an extravert he is unaware of the *modus operandi* of such a faculty, and comes too readily to rely on guesses, and so he forfeits all counter-suggestion by way of reason.

Jung describes also the absence of correction by means of sensation, which is said to be repressed, and he so explains the proneness of such a type to various uncomfortable bodily sensations.

Just as the extravert intuitive is drawn to a situation by reason of its possibilities, the introvert intuitive is fascinated by the images which arise from the unconscious. Jung describes the æsthetic type with its extraordinary esoteric artistic productions, of which one may instance Blake as an example, and the " morally orientated " type whose fascination by and reliance upon his inner vision produces a mystical thinker, especially well illustrated in the poet-metaphysician, Coleridge.

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Both the extravert and the introvert types of intuition will be readily recognized. They are mingled in the following passage from *The Learned Knife :*

" To feel that a contact is somehow false, that one is for some obscure reason responsible for another, that two types of association are, all appearances to the contrary, really incompatible, that some pursuit must be abandoned for no reason that is apparent at the time—these are the kinds of intuitive apprehension which serve to render the timid soul uneasy and discontented, but which inspire a more positive type to destroy his existing world for the sake of a more fundamental order of co-ordination " (51).

The life of Coleridge exemplifies the introvert intuitive type, whose mind was always drawn to the subtle interior aspects of experience. Coleridge said of himself that he was driven from life in motion to life in thought and action. The outer world made but little impression upon him, as we have seen from the passage where he describes his unlikeness to Scott. Even from childhood he had never seen objectively with a clear hard sense of outline ; nor did he accept his senses as the criteria of his beliefs. " To connect with the objects of our senses ", he said, " the obscure notions and consequent vivid feelings, which are due only to immaterial and permanent things, is profanation relatively to the heart and superstition in the understanding " (52).

It may be difficult to realize, when one recalls the vivid picturesqueness of " Kubla Khan " and " The Ancient Mariner ", that Coleridge's sensations were not naturally vivid. It was the vision of his inner images that was so startlingly clear cut, and along with this his intuition which penetrated and illumined the reality underlying their appearance. And so we are enabled to comprehend what is difficult to conceive in the abstract, the repression which Jung describes as falling on the sensation of the object, and can more readily understand his description of the compensatory extraverted sensation function of an archaic character in the unconscious. " Kubla Khan " was the result of a free outpouring from the subliminal depths uncontrolled by any conscious elaboration ; and the archaic quality of its imagery is uncontestable. In " The Ancient Mariner " " the creative energy is both conscious and unconscious in one and the same exercise—controlling consciously the throng of images which in the reservoir have undergone unconscious metamorphosis "(53). How objectively vivid is its imagery ! Everyone knows of Coleridge's unhappy addiction to opium. Here again we have an illustration of the compulsive neurosis which Jung describes as one of the morbid manifestations of such a type.

Function and Attitude.

In so far as outer circumstances promote the prevalence of a general attitude, they likewise favour the ascendancy of one definite psychological function. Indeed, as Jung reminds us, no person is simply extraverted or introverted except in the form of certain functions. Likewise functional attitude types

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can be observed according to the degree of differentiation of any of the basic psychological functions, and so typical thinking, feeling, sensational and intuitive attitudes are described. Jung also describes "social" types, "for whom a collective idea expresses the brand". In certain cases he considers that the "social type" outweighs the "function type" in significance.

I think Jung's conception of attitude, conscious and unconscious, extraordinarily suggestive; but this grouping of types in accordance with the predominance of a psychological function, although at first it may appear to simplify matters by rendering specific what was rather vague and ill-defined in the general attitude, really introduces fresh complications. By reason of the predominance of any such function, the general attitude itself undergoes a subtle but quite definite change. Extraverted intuition, for example, is no mere conjunction of intuition with an extraverted attitude. I prefer to regard it as a new synthesis, compounded of the union of these two, and by reason of the infusion of intuition into the general attitude, the latter loses much of its original identity. Thus the intuitive extravert's contact with others is admittedly slight. He has many acquaintances, but few friends. So independent is he of the judgment of others that he tends to be remote from them. His extraversion is less apparent than his intuition. Indeed, in many ways his life is nearer that of an introvert. It certainly does not possess that blatant extraversion so evident in the feeling-extravert type.

One might put it this way: Whether, is it more important about such a one that we should know if he is an extravert or an intuitive type?

Very often it may be impossible to determine that he is an extravert, but that he is an intuitive type cannot fail to be recognized; and my experience leads me to place more reliance on the certain operation of a definite psychological function than on the supposed existence of a general attitude. Besides, the intuitive process is a more or less constant one, whilst the extraverted or introverted attitudes fluctuate considerably.

Similarly with a thinking type. It is often more valuable to know that a person is an intellectual than to know his general attitude, the nature of which can best be determined by the nature of the particular material with which his mind is occupied.

Inter-relationship of Functions.

Absolute sovereignty, according to Jung, can belong to one function alone. Where such naturally opposed functions as thinking and feeling have equally decisive power, we are said to be dealing with relatively undeveloped functions. The principal function may be aided by one not naturally antagonistic, and the pairing of such functions has been described at length. Conscious thinking aided by intuition functions with relatively repressed feeling and sensation, and so on.

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I have never been able to bring myself to understand fully this theory of opposed psychological functions. Where a function has fallen into abeyance through disuse, one can appreciate the deficiency in the general attitude, but I cannot see that, say, feeling is repressed because thinking is in the conscious ascendancy. The ideal person would adapt himself by thinking when the situation requires such, and by feeling when this is needed; nor should it be impossible that these should be so blended together that a fused thinking-feeling attitude prevails. These functions are so tightly "compartmented" for descriptive purposes that one too easily forgets how difficult it is to separate them in practical investigation.

It would seem to depend rather upon the nature of the problem which confronts the mind, whether thinking necessarily interferes with feeling, or *vice versâ*. Moreover, certain types of thinking are less opposed to the presence of feeling than others. If one were to proceed to split up into their component parts each of Jung's psychological functions, one would get back ultimately to individual psychology. Jung has hinted at such a subdivision of thinking into its speculative, mathematical and empirical forms, and similarly with other functions. With such subdivisions, the larger groups would be in danger of dissolution. Ultimately, the science would cease to be the science of types and be purely that of individual psychology. None the less, the study of Jung's type psychology does afford an insight into individual psychological reactions which could not otherwise be obtained.

Personality Factors.

McDougall considers that much of the obscurity which surrounds this question of type psychology is due to the lack of consistency in the terminology employed. He would have us regard the factors of intellect, disposition, temper, temperament and character as independent variables in personality make-up. He charges Jung with confounding temperamental, dispositional and characterological factors. Jung, of course, speaks of "attitude," which seems to me to be the best suited word for his purpose. McDougall considers that the position of any person on the extravert-introvert scale depends on temperamental factors. Temperament he defines as the influences, direct or indirect, of bodily metabolism (especially of the endocrine glands) upon the psycho-physical processes of the nervous system.

The word "temperament" has always had this connotation, comprehending as it does a mixture of the physical and the mental, but even though McDougall's definition were accepted, it is not psychological and not helpful. How can one know that any particular manifestation is the outcome of influences of the bodily metabolism? It would be well to trace the development of temperamental proclivities, but McDougall's definition precludes our doing so. Very little indeed is known of the influences he speaks of. In so far as endocrine

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influences are understood, it is only in their grosser bodily manifestations. The introduction of the physiological side of the question merely complicates matters. One might try to separate an innate psychological reaction from an acquired one, as, for example, instinctive fears and derived fears. But even this is not always possible, for from the day of its birth the baby is subjected to environmental influences of wellnigh incalculable importance for its future behaviour, and it is seldom possible to separate these from the deeper lying influences springing from temperament. Inborn and *milieu* influences blend imperceptibly, and it would seem that Jung is justified in preferring to distinguish his larger groups by general attitudes.

Conclusion.

Jung's theory of psychological types is the culmination of his previous psychological theories; and these are so closely interwoven into its texture, that any attempt to separate them from it would inevitably destroy the whole fabric. The acceptance of the type theory implies, therefore, an acquiescence at least in the theories out of which it arose. None the less, it is just in its rudimentary state that one finds the theory least acceptable. One may applaud the stroke of genius whereby the psychological phenomena of hysteria and of dementia præcox are accounted for by the assumption that in one case the psychical energy is outwardly directed, and in the other inwardly, without going so far as to agree that the contrast is one that has its necessary counterpart in normal life.

There is no necessary reason for assuming that the libido movement occurring in hysteria and dementia præcox should operate in so widespread a fashion. There is certainly no reason for regarding such libido movement as being essentially the prototype of normal libido movement, and of stigmatizing similar libido movement in other pathological states as " peculiar ".

The extraversion and introversion which occur in mania and in melancholia respectively, have every bit as much right to be regarded as the true counterparts of normal extraversion and introversion. According to the hysteria-dementia præcox contrast, attitudes, exclusive of each other, are to be sought for; for the hysteric does not suffer from dementia præcox, nor the precocious dement from hysteria. Whereas if the contrast had been made between mania and melancholia, and a theory had been built upon the contrast, mechanisms occurring in the selfsame person would have received more attention than attitudes occurring in different persons.

This is not to deny that typical attitudes such as Jung has portrayed exist. They assuredly do. But typical attitudes are rare. One bears in mind that Jung says that the preponderance of the one mechanism over the other constitutes the attitude, but seldom is there such preponderance. Adaptation to circumstances, both of the outer world and the inner life,

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necessarily calls for the use of both mechanisms. No doubt the outer world is all too imperious in its demands, and the inner life is apt in consequence to suffer neglect, and in our modern life extraversion plays too important a *rôle*. But there are many secret sources of nourishment of the inner life also, not by any means self-evident, which help to right the balance.

In its broad general formulation, the theory of types which Jung so brilliantly expounds appears so cogent as to force acceptance upon us ; and it is only when it is submitted to a detailed and critical study that doubts arise and our acceptance becomes qualified.

We know what is meant in popular parlance by extraverts and introverts, and we can see that in a rough general way mankind might be so classified. But we have to transcend popular phraseology, and determine scientifically who are the real extraverts and the real introverts. We have to translate an abstract definition into concrete terms, and to distinguish accurately between true types and false. And when we do this, when we search for the real extravert, we seldom succeed. Theoretically, the preponderance of either mechanism would constitute an attitude, but practically this may be so slight as to make us prefer to regard persons as normally both extraverted and introverted.

Admittedly, there are striking exceptions, and Jung would seem to have built his theory on an intensive study of such exceptions.

Whether the theory of psychological types stands or falls is of little moment as compared with the unrivalled insight into the workings of the human mind which Jung's psychological writings in general, and his *Psychological Types* in particular, afford. The abiding impression left by a careful perusal of *Psychological Types* is a profound respect for Jung's analytical genius. Incidentally it is a work whose merits are the more apparent by reason of its admirable English presentation.

It will be remembered that Jung could not allow his early theory to remain in the form in which he had propounded it. Further analysis revealed that the feeling type could not be identified with the extravert, or the thinking type with the introvert ; and so recourse was had to still deeper investigation, and we are now told that in all doubtful cases—and they would appear to be numerous—an exhaustive examination of the psychological functions of thinking, feeling, sensation and intuition is required before the category can be determined.

This is a somewhat difficult task, and often an impossible one, for these functions cannot be discriminated with such exactness as Jung would have us believe.

Moreover, this further elaboration and refinement of the general attitude theory has had the effect of dissolving, at any rate in part, the apparently solid truths of the earlier pronouncement.

It was in order to bring greater clarity to type diagnosis that Jung found it necessary to introduce the consideration of psychological functions into his

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theory; and it is just this introduction that has made these functions loom more largely in our vision, and has caused the general attitudes to recede into the dimmer background. For despite the difficulties of isolating these functions, it is true that the predominance of one function over another may be so marked in a person as to make it much more important for us to recognize its presence than to be able to recognize the general attitude.

I may illustrate that in this way. Jung's insight into human psychology appears to be due in large measure to his unique intuitive powers. His whole psychological outlook is permeated with intuitively sensed knowledge. It is this that makes it so very difficult for anyone to apprehend his teaching, and accounts for the fact that he has been styled a "mystic" rather than a scientist. He is an intuitive who has been absorbed in the problems of the inner life; and if I had to hazard an opinion I would place him in the introvert intuition type. For me, the fact that he is intuitive is more important than that he is an introvert. His intuition will always be in evidence, whilst his introversion will be shown only when the needs of the situation call it forth.

And what, after all, do we know about a man when we know that he is, say, an intuitive introvert? I believe Coleridge to have been such; and yet how utterly unlike are Jung and Coleridge! It is the psychology of the individual that matters, not the designation of his type, and the especial value of Jung's type psychology is just the fact that it enables us to have a richer and deeper knowledge of individual psychology.

The theory of psychological types is an abstract theory. Jung tells us that there is no question of *deductio a priori* in his conception, but that it represents merely a deductive presentation of empirically gained understanding. Add to "empirically", "intuitively", and you have the explanation of the difficulty of applying the theory in practice. Such intuitive apprehension as Jung possesses must be exceedingly rare. I must confess that I have not been able to apply this theory in psychiatrical work, save in a very few instances, and when I hear people talking glibly of Jung's theories and of the necessity of determining a type category before applying treatment, I suspect that their observations have been superficial and their assumptions ill-grounded.

Certainly, we must learn Jung's theories; but in so doing, let us remind ourselves of his own words: "Learn your theories as well as you can, but put them aside when you touch the miracle of the living soul. Not theories, but your own creative understanding alone must decide" (54).

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CRIME IN SCHIZOPHRENIC REACTION TYPES.

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THE following is an account of the cases of schizophrenia admitted to Broadmoor from 1900 till 1931.

The use of the term "schizophrenia" in place of "dementia præcox" has rendered the classification of these cases more accurate than would have been possible with the older name, and also made possible the inclusion of several cases which otherwise would have had to be left out.

The range of cases is wider than that usually found in a mental hospital, varies from the slightest disorder to the most profound, and varies from cases of recent to remote onset.

The greater variety of those cases dealt with in Broadmoor, as compared with those treated in mental hospitals, is due to the fact that they have each committed a serious crime, which has involved a trial; and had it not been for the crime and subsequent trial, there seems no reason to doubt that many of the cases would have progressed to a much more obvious degree of insanity before coming under care and control. This is of great importance with regard to the permanency of the recoveries which will be seen to have taken place.

The majority of the patients admitted to mental hospitals have arrived at such a stage of their illness as to render them unable to look after themselves, and are recognized as of unsound mind, while the patients admitted to Broadmoor, with the exception of those who committed their crimes while under treatment in mental hospitals (3 out of 75 in the present investigation), have not been recognized as of unsound mind, and have come under observation as a result of their antisocial acts. It is true that when the antisocial act is of the nature of a minor offence, the patient is sent to the county mental hospital; but even here experience shows that in general these patients are in a more advanced stage of their mental disorder than those admitted to Broadmoor.

On the whole there are very few of the cases that do not show, on careful examination of the history, those changes of personality, each of little significance in itself, but together indicating the general trend of the individual towards the dividing line between sanity and insanity. The dividing line is

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crossed by the majority of these cases which are the subject of this article when they commit the crime of which they are found guilty.

From 1900 to 1931 inclusive, 1,855 male patients have been admitted to Broadmoor, and of this total there have been 75 cases of schizophrenia, *i.e.*, approximately 4% of the total. It must be borne in mind that this figure does not represent the percentage of schizophrenics who commit crimes, but has reference only to patients who have committed the more serious offences.

Procedure leading to reception.—On trial 25 patients were found to be insane on arraignment and ordered to be detained during His Majesty's pleasure ; 33 were found to be guilty but insane at the time of committing the act, and ordered to be detained during His Majesty's pleasure ; 14 were convicts who had become insane when serving sentences of penal servitude, of whom one was undergoing a life sentence ; 1 was sentenced to death and sent to Broadmoor while awaiting execution ; 2 were youths who became insane while serving sentences of Borstal detention.

Three of those ordered to be detained during His Majesty's pleasure were certified patients undergoing treatment in various mental hospitals at the time they committed their offences, and the ensuing criminal trials were apparently a matter of procedure in order to have them cared for in an institution more suited to the treatment indicated by the dangerous character of the patients.

Crime.—The following is an analysis of the different crimes committed, and it will be seen that, as one would expect from what has already been said, crimes against the person are much more frequent than crimes against property.

(1) Murder	26
Attempted murder	18
Manslaughter	3
Grievous bodily harm	7
Rape	1
Other sex crimes	2
(2) Burglary, etc.	16
Arson	1
Blackmail	1
Malicious damage	1

The dangerous nature of the cases and the high incidence of the homicidal tendency will be obvious.

Age.—The age at the time of onset does not appear to differ in any way from the general age-incidence of schizophrenia, the youngest being 15 and the oldest 31 years of age.

The twenty-third and twenty-fourth years show the greatest admission-rate, and the average age is 24.

The figure gives rise to some speculation. The changes of puberty and its adjustments to social conditions expose a number of misfits. There is a

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diminution towards 18, and from then on a rapidily increasing number up to 23 and 24, when the number steadily falls away to nothing after 31.

The paucity of cases about the age of 18 is probably accounted for by the fact that schizophrenics of that age have either drifted into mental hospitals in the ordinary way, or committed minor offences and reached the mental hospital *viâ* the remand prison. This will be referred to later.

With the ever-increasing necessity for the individual to look after himself, his failure of reaction to his social environment becomes increasingly evident; the added responsibilities of marriage and children, and the necessity of providing for them, gradually exact their due, until most of the cases come under control and treatment.

The majority of the cases were of industrious working-class parentage, received an elementary school education, and their environment had been fair. One quarter were of vicious parentage and bad environment, while one-sixth were of professional and upper-class parentage, of good education and good environment.

Heredity.—In 21% there was evidence of insanity in the family history; 3% showed a family history of epilepsy and 4% of drunkenness, but none admitted to crime.

Examination of the influence of hereditary insanity reveals:

Paternal family history of insanity	8
Maternal family history of insanity	5
Both paternal and maternal	1
Insane brothers or sisters	2
	16

Types showing heredity: Simple, 8; katatonic, 3; hebephrenic, 4; paranoid, 1.

The disposal of this group is of great interest and extreme importance: still detained, 8 (of whom 3 are apparently normal); transferred, 1; dead, 3; discharged, 4.

Six of this group not only showed a family history of insanity, but had had at least one previous attack of insanity treated elsewhere, and the disposal of these is as follows: still detained, 3 (of whom 1 is normal); transferred, 0; dead, 2; discharged, 1.

Thus, the most frequent type showing heredity is that of schizophrenia simplex, and the least common the paranoid type.

But of special interest are the recoveries. As will be seen later, the total number of discharges in the whole group examined was 12, or 16%, yet of this number, 4 had a bad family history. One hesitates to use percentages in a small number of cases, yet for purposes of comparison it appears that in those cases where there is a hereditary taint, there has been a recovery-rate of 25%, while in the rest of the group where there is no such history the recovery

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rate is only 13·6%. It may be that the examination of a larger number would show a different figure, but it seems safe to assume that heredity is not of as much importance as would be expected with regard to the prognosis and ultimate discharge. And it must be noted that cases with insane heredity or previous attacks of insanity are naturally scrutinized with special care, since it is never forgotten that the majority of them are murderers, and the public must be protected from a repetition of their crimes.

Among all the cases of schizophrenia dealt with, only one has had his liberty and subsequently been readmitted to Broadmoor. His case has not been considered a recovery.

Epilepsy and drunkenness do not appear in these cases to be of any importance.

Disposal.—In the accompanying table the cases have been divided into two main groups, *viz.*, those with and those without previous attacks of insanity:

	Still detained.	Transferred.	Dead.	Discharged.
Previous attacks	15	4	5	4 or 14·3%.
First attack	20	13	6	8 or 17·0%.
Total	35	17	11	12 or 16·0%.

Thus, while it appears to be the case that heredity does not prejudice the chances of recovery, previous attacks of insanity do, and the recovery rate is lower in those who have had previous attacks than in those who have not.

Forms of schizophrenia.—The grouping used in this article is the usual one of simple, hebephrenic, katatonic and paranoid types, and in the following table is found the disposal of these various types. In going through the older records it was found difficult to differentiate accurately between the hebephrenic and katatonic cases, and they have accordingly been grouped together:

	Number.	Still detained.	Transferred.	Died.	Discharged.	Recovered.
Simple	42	19	11	4	8	19%
Hebephrenic and katatonic	23	10	4	6	3	13%
Paranoid	10	6	2	1	1	10%

From this it is seen that while the simple type contributes more than the other three types together, it also contributes the greatest proportional as well as actual number of discharges. This is particularly evident when one considers that, of all the schizophrenics still detained, the 8 who are apparently normal at the moment are of the simple type.

This proportion of schizophrenia simplex is greater than is usually met with in ordinary practice. Owing to this high proportion, the relationship between this type and criminal lunacy is of greater importance than one would expect.

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The reason probably lies in the insidious nature of the change of personality, which is often not recognized as being actual disease of the mind until the patient falls foul of the law. It is in this type that the greatest variations occur, and in this type that one finds the greatest differences between criminal schizophrenics and those treated in mental hospitals.

Convicts who become insane conform to the ordinary symptomatology, and are similar to the mental hospital cases.

The main differences occur in those patients who have been ordered to be detained during His Majesty's pleasure.

The question that the prison medical officer has to decide in examining a case charged with a grave offence is primarily whether or no the prisoner was insane *at the time he committed the act with which he is charged.*

In this way it frequently happens that patients who have had a verdict of "Guilty, but Insane" recorded against them show little or no signs of insanity when admitted, and in many cases it is difficult to arrive at a diagnosis—a matter which becomes of importance when the patient's discharge comes under consideration.

Patients are rarely certified and admitted to a county mental hospital on the evidence of a single insane act, and it is for this reason that the range of schizophrenics in Broadmoor is greater than in the county mental hospitals.

The following case shows the difference between the ordinary certifiable schizophrenic and that type of schizophrenic who does not show the usual symptoms, and yet has proved himself to be such a menace to society as to render his admission to Broadmoor imperative:

CASE I.—(A. B.). Family history negative for alcohol, epilepsy, insanity and crime. Healthy and robust build, and no history of any serious illness. Previous convictions for larceny: (1) 3, 3 and 3 months concurrent, (2) 3 months, (3) 6 months, (4) 3 years Borstal—licence revoked.

He did not care much for his father, and eventually dislike became hate, and he left home at 16 years of age. There has always been a very strong affection between patient and his mother. Although he found various forms of work, he showed little application, drifted into a life of crime, and began to drink heavily at times. His crimes were somewhat irresponsible, and not very profitable; there was no real necessity for him to steal. On board ship he made a violent attack on the captain on one occasion, and had no recollection of it. Later he was admitted to mental observation wards for two days, but not certified. Within six months he was certified while in prison, when he was dull, destructive, filthy in his habits, and had to be fed. He quickly recovered, and was not sent to the asylum. Shortly afterwards he was sent to Borstal. While there he became unduly occupied with thoughts about women. He had never had the same ideas as his friends about women, and, indeed, had no interest in them as a sex. He felt that there must be something wrong with him, and previous to being sent to Borstal, had attempted to allay his doubts by consorting with prostitutes on two occasions; as a result, his distaste for women's society became fixed. In Borstal he began to resent women as a sex, and he gradually discovered that resentful thoughts produced a sensation of lust.

From this stage he progressed to definite ideas of violence, and some time after regaining his liberty committed violent assaults on women from time to time, which remained undetected.

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While alone one day in his house, his mind as usual occupied by these thoughts, a little girl came to the door. The patient opened the door, dragged the girl into the house, half-strangled her, and then killed her in a most violent and revolting manner in his bedroom. For the first time he had an orgasm. He realized the serious nature of his position, and buried the body in an attempt to hide his crime. Later he helped the police to look for the body. He was sentenced to death, but as a result of the after-trial inquiry was sent to Broadmoor. On reception he was calm and composed, well orientated in all spheres; his memory, perception and attention were good, and he did not appear to be deluded.

This case would have been difficult to certify as of unsound mind at the time of his admission.

He illustrates very well the insidious change of personality not at first recognized as insanity. This, together with his previous attacks of mental unsoundness, the failure of his will-power to restrain his abnormal sex impulses; his unresolved Œdipus complex, and the absence of remorse for his conduct, suggest the diagnosis of schizophrenia.

This case, then, is an example of the type of patient in whom it is only possible to arrive at a diagnosis of actual insanity by a careful investigation of the patient's history. In this respect, owing to the activity of the police, the available histories in all criminal cases are much more accurate and complete than is the case with the mental hospital patient. In pre-trial murder cases the friends are apt to produce an embarrassing number of symptoms of insanity, which tend to obscure the patient's real condition.

In the next case the condition of the patient is much more obvious:

CASE 2.—(C. D.) Family history negative. Healthy, robust patient, and no history of any serious illness. No previous crime.

He did well at school, and at first did well in the Merchant Service, but later began to show signs of mental instability, shunned company, and finally attempted suicide by drowning. He was looked after by his father when sent home and remained solitary and introspective. He took an active dislike to his father, but says he was able to put up with his unhappy condition on account of his very strong affection for his mother. His dislike of his father became too much for him, and, to escape, he joined the Army. He found the discipline of the Army more irksome than his father's had been, so he deserted and returned home. After his discharge as mentally unfit he remained at home for nearly a year before his crime, and did not associate with anyone.

For some weeks before his crime he thought his mother was becoming rather too friendly with his father, so he decided he would leave home, and cast about for some method whereby he would be inaccessible to his father. Finally he hit on the plan of committing a murder. He had noticed that his memory was not what it used to be, so he made a note of his intention on a piece of paper. On the following day, having been reminded by his note, on which he had written "Kill baby", he walked up to an unattended perambulator outside a shop door, picked up the baby, and tried to kill it by dashing the infant's head on the stone pavement. The child did not die, and patient was charged with attempted murder, and ordered to be detained during His Majesty's pleasure.

On reception he was dull, when spoken to averted his face, or gazed at the ground, only entering into conversation after much persuasion. At times he broke into a silly grin; he was slow to answer questions, although he answered accurately; betrayed no remorse for his conduct, and discussed his crime without any emotion; said that he had never associated with women and shunned their company.

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It appears that his father had been constantly trying to rouse the patient from his apathy and to stimulate his ambition. At first the mother had not realized the nature of the lad's condition and had been inclined to pamper him, only realizing her mistake a few weeks before the crime. The patient did not appear to have any delusions of persecution by his father.

There are a few similarities between this and the previous case, but Case 2 is a fairly typical example of schizophrenia simplex.

Both the previous cases come from the same social grade and had similar advantages in life and the same type of education, and the following example of hebephrenia has been chosen because his home conditions and upbringing were similar to the other two :

CASE 3 (E. F.) A maternal cousin is insane. No previous convictions. No history of any serious illness.

At the time he was in business he had a mild love affair which ended in a quarrel. The business failed through no fault of the patient's, and he was very worried, as a good deal of money was lost in the failure. He became somewhat solitary, and having decided to study for an examination, displayed great application, but the strain told heavily on him. A week after passing the examination he was arrested for throwing vitriol in the face of a man who, it was alleged, had seduced his married sister.

During his remand he was sullen and solitary, and would not discuss his case. He was sentenced to eight years' penal servitude. His mental condition gradually became worse, and he was certified nearly a year after his crime. He was then dull, apathetic, indifferent to his surroundings, and slovenly in his dress and habits. His condition remained much the same during his first year, and from time to time he refused to get up in the morning. He began to make drawings of girls being flagellated, and occupied his time largely in this manner while he was supposed to be reading technical books.

Suddenly one day he became noisy, shouting " I am a genius ". The next day he was quiet, refused to get out of bed, and asked for a private interview. He again announced in a calm way that he was a genius for the reason that he was possessed of two central nervous systems ; this made him a dual personality, and he was thus bound to be a genius. The reason for his excitement on the previous day was that one nervous system was female and one male, and the two systems were constantly having sexual intercourse with each other, thereby producing a great deal of nervous excitement which he had much difficulty in controlling. He found he felt better if he lay perfectly still.

He further stated that when his brother-in-law fell in love with his sister, he unwittingly fell in love with the patient. He is now communicative, and from time to time confesses to other bizarre delusions. He is now becoming subjected to influences by other patients who, he says, can read his thoughts.

His case shows the gradual onset and slow progress of hebephrenia, the feelings of influence, the bizarre delusions, and the emotional disturbance ; and while his memory appears to be quite good, he is at times incoherent in his thoughts.

The following example of katatonia comes from a lower social grade than the others, but he was originally a man of high intelligence. Kraepelin describes katatonia as developing more acutely than the other type, and this is so in the following case :

CASE 4.—(G. H.) No previous convictions. One brother in an asylum.

He was unable to give any account of himself, and no rational answer could be obtained from him. He would suddenly swing round and stare at a spot on the

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wall, and shouted as though he had hallucinations of hearing. During a clearer phase it appeared that on the morning of the crime he had taken a dog to be destroyed, and had actually witnessed the killing. He appeared to remember something of the crime, and said, " It had to be ; there was no future for the children ; there was a taint in the blood ".

He quickly lapsed into an acute state, at times in a dull stupor, as a rule obeying automatically, but occasionally resistive, refusing to speak or eat his food. At exercise he would strut up and down on the same line until he wore a smooth path for himself. Suddenly he would strike dramatic attitudes, and maintain them for long periods of time. In his stuporose phases he would exhibit *flexibilitas cerea*, or he would only speak in a deep, solemn, sepulchral voice, even when making such a trivial request as asking for permission to write a letter. At times he expressed suicidal intentions, and occasionally he was violent.

His condition varies from time to time, but he passes through all these phases every now and again ; there is now, however, a considerable degree of dementia.

In the following case the same conditions of environment and schooling obtain as in the first three described ; and it demonstrates the multiple, unsystematized and fantastic delusions with hallucinations, associated with ideas of persecution and grandeur, and early onset of dementia found in the paranoid type :

Case 5.—(I. J.) His father was insane. No previous conviction.

For eight months previous to the crime he said that people had been talking about him and making statements derogatory to his conduct during the war. More recently people had been conspiring against him, his food was being poisoned and his wife was concerned in it, possibly with a view to getting him put in an asylum. On the night of the tragedy the conspirators made a gas attack on the house ; he feared his wife was dead, fired two shots in the air with his revolver and shouted for help. A near relative came, and patient saw by his evil, malignant expression that he was a conspirator, so he shot him. In prison he believed that gas and ether were put in his cell, that electricity was " put on him " by orders of the medical officer, who had also added a day to the calendar, etc. He also believed he was the Prince of Wales.

After a month or two in Broadmoor he became resistive and obstinate, abusive towards the attendants, and stated that he was King Richard of England, and had superseded King George. Later he had the idea that people in Buckingham Palace were injecting themselves with poisonous material and sending it to him by " Marconi " ; this caused him to break out in boils. Then he decided that the medical officer was also a " marconigrapher ". In another six months he had elevated his relatives to the Peerage, and very soon after he began to be destructive in his habits. Before another month was ended he was openly masturbating and smearing himself with urine and fæces. A few months later his habits improved and he became His Grace the Duke of Buckingham.

Then followed a phase in which he crowned himself with his chamber, and very soon he took every opportunity he could to do this, having no regard to whether the chamber had any contents or not. After a few months he conferred titles on the medical staff, and from that point he began to dement rapidly. As dementia advanced his habits improved, and now, six years after the onset, he is an amiable dement, easily managed and obedient in his behaviour, but with no capacity for conversation, no interests, little or no memory, and no will power.

With the exception of Case 4, all the cases described are drawn from the same class of society, with similar environment, similar training, outlook and

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ambition, but each showing different symptoms of the same process, each progressing by a different route towards the same end, namely, dementia.

Incidence of Schizophrenia over the 31-Year Period.

This seems to be of some significance, and bears some relation to social conditions generally. In the following table appears the admission-rate of criminal schizophrenics over the 31-year period :

Admission-rate Table.

Year . .	1900.	'01.	'02.	'03.	'04.	'05.	'06.	'07.	'08.	'09.	'10.	'11.	'12.	'13.	'14.	'15.
Numbers .	2	1	7	4	6	3	2	1	5	3	1	2	2	4	2	2
Year . .	1916.	'17.	'18.	'19.	'20.	'21.	'22.	'23.	'24.	'25.	'26.	'27.	'28.	'29.	'30.	'31.
Numbers .	0	0	0	0	0	2	2	4	2	2	4	3	2	2	2	3

Following the Boer War there is a high admission-rate, which is maintained till 1905. By 1908 it is again high, but after that it keeps low till 1913, when there is another rise. It falls in 1914, and in 1915 there are two cases, both of which it is of interest to note come from county mental hospitals. For six years there are no admissions at all, but they gradually increase after that, and maintain the same average as the period between the Boer War and the Great War.

With the exception of the Great War period, the figures follow much the same course as the incidence of crime in general. It would be rash to assume from this figure alone that the admission-rate of criminal schizophrenics indicates the amount of crime being committed at any given time, yet this aspect must be given some consideration.

Since the beginning of the century there have been several periods of excessive crime, *viz.*, after the Boer War, prior to the Great War, and following the Great War. These periods coincided with periods of unemployment and poverty, and it is reasonable to suppose that the worry and anxiety of hard times would be a predisposing cause in precipitating potential schizophrenics over the border-line. This does not account, however, for the fact that none came to Broadmoor from 1914 to 1921, leaving out of account the two admitted in 1915 who committed their crimes while under treatment in mental hospitals where they had been for years. It is well known that mental hospitals were considerably understaffed at that time and conditions quite abnormal.

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As has been seen already, the average age of these cases is from 23 to 24 years, and the class they are drawn from would be actively engaged in the war. Henderson says that " cases of acute onset were noted particularly during the war years where the schizophrenic type showed itself in a simple form and with more frequent recovery than is the rule with civil cases ".

The physical and mental stress of the war would be more likely to render the onset acute than conditions of industrial difficulty, and it is probable that this fact helps to account for the absence of crime in schizophrenics during the war. Also the death-rate during the war must have been very heavy in the same age-group.

Reverting to the figures for age-incidence, where it is seen that there is a sharp fall in the number of cases at 18 years of age and a rapid increase after that age, it is conceivable that the depressions in each set of figures are dependent on one another in some degree. That is to say, many of the youths who might have been criminal schizophrenics were serving in some capacity during the War, and owing to the acute onset of the disease it was possible to have them certified before they could commit crimes. It may be for this reason that there were fewer cases immediately after the Great War than after the South African War.

It has already been noted that the majority of the cases are of the simple type, and that many of them could not be certified as insane at that stage of the disease at which they arrived in Broadmoor. It is also known that patients of the simple type are commonly found among the vagrants, unemployed and delinquents. Fifteen, or 20%, of the cases in the group examined came to Broadmoor from prison, and two from Borstal. Also, there are only fifteen, or 20%, of the cases admitted to Broadmoor of 21 years of age and under.

Are there any conditions which may account for the low number of cases under 22 years of age in this group, apart from considerations already mentioned ?

Of the cases described 37·3% have had one or more attacks of insanity, so that it is possible that many of them were in county mental hospitals about the age of 18. That does not affect the actual criminal lunatics, but it suggests that some potential criminal schizophrenics of that age are being cared for in mental hospitals.

This suggestion does not account for the matter entirely, because 33·3% of the cases either came to Broadmoor from prison or Borstal, or had previous convictions for criminal offences, so that there is an equal chance that some of the cases round the age of 18 were in prison or Borstal, and were not at that stage of their condition recognized as insane.

As far as the treatment of very early simple schizophrenics is concerned, it would matter little whether they were treated in mental hospitals, prison or Borstal. In any of them they would lead a regular, disciplined life under

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constant care and control. In any of them they would be free from the cares of the world, and removed from the stress and anxiety of fending for themselves.

The friends of the young schizophrenic who has been certified generally clamour for his discharge as soon as he appears to have recovered. The average boy prisoner rarely serves a sentence of imprisonment of any longer duration than a few months. Of the three eventualities, a sentence of three years' Borstal detention, then, would seem to be the longest period of control to which a recovering schizophrenic would be likely to be subjected.

At Broadmoor, however, having regard to the nature of the offence, no discharge takes place until the patient has been considered normal for a long time. The shortest period was 2 years in the case of the murder of an infant by a boy of 15 years, and the longest period was 31 years, the average period of treatment of those discharged being 9 years. Moreover, the conditions of discharge cover a period, as a rule, of five years, and are very stringent. The most recent of these discharges has had his liberty for more than a year, and none of the cases have relapsed. With the exception of the boy mentioned above, all the cases were detained beyond the schizophrenic age-incidence limit.

The results would appear to indicate that the long period of detention enhances the permanency of the recovery, although it is possible that during the prolonged detention such cases as would relapse have done so, and left only the permanent recoveries to be discharged.

There is no doubt that many simple schizophrenics recover in Borstal. Case 1 passed through Borstal, and he underwent considerable improvement during that period. In fact he did so well that he became head of his house, and had it not been for the mental relapse he might have steered clear of crime.

It is of interest to observe that only once (in 1926) since 1908, when the Borstal system started, has the admission-rate to Broadmoor been as high as it was before Borstal started, whereas in 1902 and 1904 it was higher.

The basis of treatment at both Broadmoor and Borstal is the rewarding of good conduct by a privilege system of advancement.

In the introductory note to *Criminal Statistics* (*England and Wales*), 1930, the figures for the age-incidence of crime are given. A comparison of these figures with the age-incidence of criminal schizophrenics in Broadmoor shows a general correspondence. But, whereas age-group from 16 to 21 among the ordinary criminals comprises 21%, the criminal schizophrenics comprise only 10%.

A comparison of the general admission-rate and the schizophrenic admission-rate to Broadmoor since 1900, with the figures for the total number of persons tried for all offences and for non-indictable offences alone during the same years, also shows a general correspondence.

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Conclusions.

(1) From the foregoing observations on the criminal statistics, crime in schizophrenics is found most frequently at those *times* when crimes are most frequent.

(2) Criminal schizophrenia occurs most frequently at that *age* at which most crimes are committed.

(3) Between the ages of 16 and 21 recognizable criminal schizophrenics are not so common as such: (*a*) some have probably not exhibited their underlying state of mind, and are in prison or Borstal; (*b*) some are in mental hospitals; (*c*) some have not yet become insane at all.

(4) The discharge-rate of schizophrenia compares favourably with that of the average mental hospital.

(5) The prolongation of the period of care and control renders the recoveries more likely to be permanent.

(6) Heredity does not adversely affect the discharge rate.

(7) Previous attacks of insanity impair the prospects of recovery.

(8) The earlier the care and control and the longer the period of treatment, the better are the prospects of recovery.

I am indebted to the Medical Superintendent of Broadmoor for his assistance in enabling me to examine the asylum records, and to the Home Office for their permission to publish this article.

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TYPES OF MENTAL DEFICIENCY AND THEIR SOCIAL SIGNIFICANCE.*

By E. O. Lewis, M.A., D.Sc., M.R.C.S., L.R.C.P.,
Commissioner of the Board of Control.

In recent years there has been an increasing tendency for the papers presented at the meetings of this Association to deal with the application of science to industrial and social problems. The norms of science have been applied to the art of living. The *rapprochement* on this platform between the scientist and the man of practical affairs has gone even further. Valuable contributions have been made by administrators and leaders of industry which have indicated the scientific implications of the practical problems in their respective spheres; and by no means the least function served by these contributions has been that of propounding problems to the scientists.

This paper is written from the standpoint of a person who is primarily interested in mental deficiency as a social problem. I shall not presume to be a scientific expert with knowledge of recent researches in the various biological sciences which deal with amentia. Having had the opportunity of gaining some knowledge and experience of the social aspects of this problem, I shall attempt the more modest task of indicating what appear to me to be some fundamental scientific issues raised by this social problem, and incidentally make a plea for a more clear and definite lead from the scientists.

Progress in arriving at a solution of the social problem presented by mental deficiency is considerably hampered by our failure to appreciate the complexity and variety of clinical conditions to which the generic term "mental deficiency" is applied. That there are varying degrees of mental defect is recognized by everyone who has some experience of defectives, but many assume that the condition is fundamentally the same in the large majority of, if not in all, mental defectives. A closer study reveals a complex variety of type as well as of grade. It is advisable to speak of "mental deficiencies" and not of "mental deficiency", which is merely an abstraction. By doing so we should keep in mind the fact that we are dealing with a complex group of clinical conditions which are due to a variety of biological factors, and that no single remedial measure is applicable to all cases.

Scientists who have expounded the nature of mental deficiency have recognized this complexity. One proof of this is the generally accepted classification of primary and secondary amentia.

In this paper I am not called upon to discuss the scientific validity of this classification. I do not think I shall be charged with inconsistency when

* A paper read at the 1931 Meeting (Section J) of the British Association.

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I say that, while I believe the hypothesis upon which this biological classification is based to be sound, I also admit it does not materially help us in solving the social problems which the mentally defective present.

Let us begin with the platitude that mental deficiency is a variation from the normal mental condition, or, to be more precise, that it is a generic name for a number of such variations. There are, obviously, several kinds of variations, and the two exemplified by mental deficiency are what we shall call the normal and the abnormal types.

The meaning of these terms can be best indicated by considering the distribution of some simple physical feature of the human species. The height of adults will serve our purpose. A curve representing the distribution of the heights of all the men and women of a large civilized community would approximate to a normal curve of distribution. All members of the population, with the exception of relatively small groups, would have heights between the limits of 4 ft. 8 in. and 6 ft. 2 in. The largest numbers would naturally cluster around the median, but with certain exceptions which are indicated in a subsequent paragraph, variations from this within the limits just indicated may be said to be normal. These variations are partly and possibly largely determined by genetic factors.

But there are small groups comprised of men and women whose heights do not fall within these limits. Adults with heights varying from 3 ft. to 4 ft. are not uncommon, whilst, at the other extreme, we have persons 7 ft. in height. These individuals are regarded as examples of abnormal variations.

It is of the greatest importance to emphasize at this point that a variation is regarded as abnormal, not because of its magnitude, but because it is due to known pathological factors. Thus we know that excessive shortness of stature is due in some cases to thyroid deficiency, which produces the condition of cretinism, in many others to severe rickets, and in others to defective development of the long bones, as in the cases of achondroplasia. Excessive tallness, on the other hand, is known to be due to pathological conditions of the pituitary gland.

These examples may serve to indicate the distinction between normal and abnormal variations. Obviously this distinction can be accepted as a basis of classification only with certain qualifications and reservations. One is that we do not know precisely what is the range of normal variations; the limits of normal variations of heights are quite arbitrary, and an extensive survey of heights of men and women would possibly prove that the limits we have indicated are too narrow or too wide. Moreover, the range of normal variations of height would vary according to nationality and race. Another reservation is that there is much overlapping of the groups obtained by a classification on this basis. Although a height of 4 ft. 4 in. is in most cases a normal variation, there are many instances in which this small stature can be attributed to a mild form of some pathological condition. These reservations, however, do

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not invalidate the classification of variations into those due chiefly to normal genetic factors and those due to abnormal pathological factors.

Clinical studies in the field of mental deficiency suggest that here also we find these two forms of variation. Mental defectives who manifest abnormal variations we shall refer to as the *pathological* type and those who manifest normal variations we shall call the *subcultural* type.

The pathological group comprises all those defectives whose condition is invariably associated with and in most cases is due to some definite organic lesion or abnormality. This group includes almost all cases of secondary amentia. Adopting the classification Dr. Tredgold has given of the clinical varieties of secondary amentia, we should include in this pathological group all cases of mental deficiency attributable to trauma, inflammatory conditions, hydrocephalus, syphilis, epilepsy, cretinism, and nutritional and sensory defects. But in addition to these we should include in this group many of the mental conditions which Dr. Tredgold and other authorities regard as varieties of primary amentia; for example, mongolism, amaurotic family idiocy, progressive lenticular degeneration, hypertelorism, nævoid amentia, and many cases of sclerotic amentia. In the causation of all these varieties of defect we find the intervention of some new or alien factors, which are not found in the physical constitution of the normal human being, and these new or alien factors are of a pathological character.

The subcultural group, on the other hand, includes those cases of mental defect in which no such alien factor is found. The deficiency is only an extreme variety of normal variation of mental endowments. There is no definite cleavage between this group and the mass of normal persons. The higher grades of subcultural deficiency merge gradually into the lower grades of dullness or of temperamental instability. There seems to be a close biological kinship between the subcultural defective and the main body of normal persons—a kinship which cannot be attributed to the pathological defective.*

One question arises naturally: What is the biological basis of these normal variations of mental endowments, or, to be more specific, of general intelligence? I do not think that a discussion of this difficult question comes within the scope of this paper, although, obviously, the answer to this question determines to a great extent the significance to be attached to the classification into pathological and subcultural types.

To proceed with the main argument of this paper, I submit that this classification of mental defectives into the pathological and subcultural groups helps us materially to understand the nature of the social problem which mental

* Dr. Penrose, to whom I am much indebted for several valuable observations on the subject matter of this paper, suggests that in order to emphasize the normal character of the variations manifested by the subcultural group they should be referred to as *physiological* variations. The only objection—and it is not one of vital importance—is that physiology deals with functions, whereas the kinship of the subcultural to the normal is primarily in respect of endowments. The term "subnormal" indicates most appropriately the status of this group, but unfortunately this term is usually applied to all cases with mental capacities below normal.

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deficiency presents. Let me summarize briefly some of the general conclusions indicated by recent studies in this field of work. I am aware that some of these general statements need to be qualified, but to do so would unnecessarily complicate the case I am now presenting.

The first generalization is that most of the pathological cases are lower-grade defectives, idiots or imbeciles, whereas most, if not the large majority, of the subcultural cases are feeble-minded—the milder form of mental defect.

The second generalization is that most defectives belong to the subcultural group. No reliable statistical data are available to enable us to state with greater precision the relative numbers of defectives in the two groups, but this second generalization can be deduced from the first, since we know that the feeble-minded are approximately three times as numerous as the lower-grade defectives. Doubtless, when further researches are made into the physiological and biochemical abnormalities manifested by defectives, many of those we now allocate to the subcultural group will be found to belong to the pathological group, but even when this is done the subcultural group will probably always comprise the majority of mental defectives.

Our third generalization relates to the distribution of the two types amongst the various social grades of the general community. The pathological cases are evenly distributed amongst all sections of the community. The incidence of pathological deficiency is much the same in the superior as it is in the lower classes. The subcultural type, on the other hand, is concentrated to a large extent in that section of the community with which is associated various chronic social evils—pauperism, slumdom and their concomitants.

The fourth generalization is that heredity is a more important factor in the production of the subcultural than it is in the production of the pathological type of defective, although, undoubtedly, pathological defects also are inherited in some cases. When we find several defectives in one family they are almost invariably of the subcultural type, and most of the other members of the family who are not mentally defective are persons of subnormal intelligence.

Whilst recognizing the importance of heredity as a causative factor in the production of subcultural deficiency, we must not under-estimate the effects of the unfavourable environmental conditions obtaining in those sections of the community in which the incidence of this type of deficiency is highest. We are inclined, when we find several mental defectives in one family, forthwith to attribute their condition to genetic factors. *A priori* bad environment may with equal probability account for a group of defectives in a family. Parents of poor mentality living in a community that is organized on a competitive basis are frequently handicapped by poverty and the various adverse conditions associated with it. The inherited mental capacities of most of the children of such parents, although rather below the average, are not those of a mental defective; but it is conceivable that adverse conditions

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affecting the mother during pregnancy, and the children during their earlier years, may so reduce and permanently impair the mental vitality of these children that they prove to be inefficient educationally and socially—that is, render them mentally defective.

If these generalizations are accepted, the conclusion at which we must arrive is that the section of the mentally defective population which constitutes a social problem is the subcultural group. On account of their numbers, of their social distribution, or rather their concentration in one social group, and of their potential menace to social and racial welfare, the subcultural defectives form the crux of this social problem. The pathological defectives, on the other hand, whilst they also deserve the most sympathetic consideration, and present medical and biological features of the greatest interest to the scientist, cannot be said to present a social problem.

I fear you will think I have taken unnecessary trouble to labour a point that is obvious to all students of this subject. I have done so because I feel that our failure to make greater progress with practical remedies in this field is to be attributed largely to our failure to appreciate the distinction between pathological and subcultural types of mental defect. Most writers on this subject persist in applying the pathological conception to the whole group of defectives. No great progress will be made with the solution of this problem so long as we persist in regarding feeble-mindedness as a milder form of idiocy or imbecility, and not as a normal variation of mental endowments.

I shall endeavour to indicate a few of the practical implications of this conception of the subcultural type of mental deficiency.

The higher the species in the biological scale the greater is the differentiation both of structure and function—in other words, the greater the range of normal variation. This law applies also to the progress made by the human species; with the progress of civilization greater variety is found amongst individuals comprising the social group. If we adopt this point of view, we see that the subcultural variety of mental defect is an inevitable concomitant of progress. These inherent differences of mental endowments are manifested all the more clearly because with the progress of civilization there is a corresponding increase in the complexity of environmental conditions. The differentiation is further emphasized when the economic and social activities of the social group are organized on a highly competitive basis, as is the case in civilized countries.

This increasing scatter amongst the members of the community, whilst it may enrich in many ways the life of the group, may, unless some special precautions are taken, increase considerably the difficulty of preserving the cohesiveness of the social group. Investigations into the social and economic life of adult defectives, and of the large borderline group of persons who, although not defective, are of subnormal intelligence, show clearly that under modern conditions there is a definite tendency for these groups to be precipitated out of the general life of the community. This is one of the most

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disturbing aspects of the social problem we are now discussing. Modern conditions effect the ostracism, socially and economically, of men and women of poor mental endowments. These weaker members of the community are being handicapped more and more in the competitive struggle of earning a livelihood, and we should not be surprised when we find large numbers of them giving up the struggle and becoming dependent upon some form of public or private charity. The assimilation of workers of limited mental endowments into the industrial scheme of our country is a most important aspect of this problem of preserving the social cohesion of the nation.

One of the criticisms that will be made of the emphasis I have placed upon the fact that the subcultural type of defective is merely a normal variant of the human species, is that such a view tends to minimize the importance of the social problem which mental deficiency presents. I wish I were in the happy position of being able to prove that mental deficiency is not a social problem of serious import. Such a contribution would be warmly welcomed in these depressing days. On the contrary, I maintain that our conception of the subcultural group adds considerably to the significance we must attach to mental deficiency as a social problem.

The fact that the subcultural type of deficiency is a normal variant makes it an index of the mental status of the whole social group. The pathological type of defect, on the other hand, being of a sporadic character, is no criterion of the mental virility of the other members of the social group. Should we find a marked change in the incidence of the subcultural type of mental deficiency in any community, this would probably be associated with a change in the mental status of the large mass of persons in this community. Or again, if, when comparing two large social groups of the same civilization and of similar culture, we should find that one had a definitely higher incidence of subcultural deficiency, further investigations of all members of these two groups would probably show a corresponding difference in their intellectual capacities and general achievements. This index value of the subcultural type increases considerably the significance of mental deficiency as a social problem.

This conception of subcultural deficiency should also produce a new orientation in regard to remedial measures. Subcultural deficiency is a general constitutional defect and not a mental disease. It is general mental debility. The same factors constitute the mental make-up of the subcultural defective as that of the normal person—but with the difference that they operate at a lower level of efficiency.

Let us for a moment confine our attention to the intellectual form of mental defect. The psychologist's conception of this condition is that the defective is endowed with a lower grade of intelligence than the normal person. The difference is chiefly quantitative and not qualitative. There is not time now to discuss the nature of intelligence, and I do not wish to add to the already

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confusing mass of definitions of this entity. I think most psychologists who have studied the nature of intelligence would agree that an appropriate synonym for intelligence would be "intellectual vitality". The defect manifested by large numbers of individuals composing the subcultural group is one of low intellectual vitality. Similarly, if we are thinking of the subcultural condition as a defect of the social group and not of the individual member, we can regard it as a sign of the mental debility of the whole group.

This conception of the subcultural type of mental deficiency suggests the general lines along which we should attempt to remedy the social evils that arise from this condition. I think the analogy with the methods adopted to combat tuberculosis will prove helpful here, although I am reminded of Butler's famous dictum which implies that analogy is a diabolically dangerous form of argument.

Three or four decades ago vigorous anti-tuberculosis campaigns were organized in all parts of our country. In time, however, these campaigns changed their character, and have now been merged into a larger campaign, dealing with the broader issues of preventive medicine which are concerned with the improvement of the general physical condition of all members of the community. The earlier *ad hoc* aspect of the campaign disappeared to a great extent, because the medical profession gradually came to realize that the best way of combating tuberculosis was to effect a general improvement in the physique of all men and women, and particularly of the children, and thus enable them to resist infection. The incidence-rate of tuberculosis will always be high in a community that has large numbers of persons of poor physique, since the germ thrives in this soil. The preventive measures which are proving most effective in this field are not those which deal with the persons already infected, but those designed to improve the general health of the whole community.

The solution of the social problem which the subcultural type of mental deficiency presents will probably be found along analogous lines. The clinical condition that has to be dealt with is that of general mental debility, and the treatment which is likely to be most successful is the adoption of measures that will increase the mental virility of all members of the community. These measures should not be applied exclusively to the subcultural section, but to the whole social group. Remedial measures should be designed to improve the mental health of the whole community. A preliminary anti-mental-deficiency campaign, if conducted wisely, may serve the useful purpose of arousing the public to realize the importance of this problem, but I do not think such a campaign, so long as it relates to the mentally defective alone, will lead to effective preventive measures. But should it prove to be the forerunner of a campaign dealing with the broader aspects of the mental health of the community, then we can hope for many beneficial results, and amongst them would be the solution of the social problem of mental deficiency.

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THE HUMAN FIGURE DRAWINGS OF ADULT DEFECTIVES.

By C. J. C. Earl, F.R.C.P.I., D.P.M.,

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Introductory.

The drawings of children have been studied by many observers during the past forty years, and have yielded valuable information for the psychologist, the ethnologist and the pedagogue. Many of the studies were concerned with the development over a period of years of the drawings of a single child (Luquet (12), Stern (19), Eng (3)). Others were concerned with drawings taken from a large number of children of varying ages. Principal among these studies is that of Rouma (17) in 1912, drawn from a wide field, carefully and accurately observed, and published with a wealth of illustration. More recent researchers have employed the quantitative method, and McCarty's (14) study, published in 1924, is of value principally for its elaborate statistical survey.

By far the most important study yet published is that of Goodenough (5), based upon the drawings of 3,593 children from several districts, and using a simple and entirely objective method of scoring, quite independent of artistic merit. The subject for the test is the human figure, chosen mainly because this is the most popular subject amongst children. Goodenough also contributed a most valuable qualitative study and an exhaustive bibliography (7).

The drawings of defective children have also been the subject of inquiry, though mainly as a side issue arising out of a study of the normal.

Rouma, in 1912, summarized the characteristics of subnormal children as follows (p. 248) :

" (1) A very marked tendency to automatism.

" (2) Frequent manifestation of the flight of ideas. The drawings, which cover a sheet of paper are unfinished. They are numerous, and represent a number of very different objects.

" (3) Frequent retrogressions to inferior stages.

" (4) Slowness in development in the various stages.

" (5) Certain drawings of subnormals, considered alone, are perfect; but when examined more closely we see that the child confines himself to a series of stereotyped forms (clichés), which have evolved slowly, being modified little by little, up to a certain degree of perfection. It is the conservative tendency of the child which has favoured the development of the design. It happens sometimes that these abnormal children have a very great power of visual memory and are capable of producing remarkable designs. These subjects are comparable with

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the inferior type who show one remarkable faculty—Inaudi and Diamondi are the best known cases.

" (6) Many subnormal children take great care to present completely the idea which they are drawing, or to reproduce in all its details the acquired stereotyped drawing. It is this tendency which favours the perfection of certain sketches mentioned above.

" (7) Subnormal children like drawings in which the same movement recurs frequently, and they do meticulous work."

Cyril Burt (2) in 1921 published an account agreeing fairly well with Rouma's findings. He stressed the wide " scatter "—the co-existence of primitve characteristics with those of a more mature type—and also a tendency for undue elaboration of detail and exaggerated decoration. He found, too, a tendency to draw schematic and stylized figures, and lastly, in common with other observers, he noted an incoherence, a lack of proportion between the various parts of the drawing.

All these observers dealt purely with the drawings of children ; no account of the drawing ability of adults, either normal or defective, has been published. For the normal this is not unexpected, for as both Goodenough and Burt point out, a stage is reached where the adolescent, realizing his inadequacy as an artist, fails to make a real attempt.

The present study was undertaken as an examination of the drawings of adult defectives, and in particular as an evaluation of Goodenough's test as a component in a battery of performance tests for these subjects.

Method of Giving the Test.

Goodenough gave the test as a group test, but with defective subjects the writer has found presentation as a single test far more suitable, though small groups of four or five give quite good results. Observation of the subject at work is interesting, and gives valuable information from the point of view of personality rating—giving evidence which is often more important than the score of the finished product, and may, in fact, invalidate that score—as in the case of certain subjects in this series, whose drawings represented a lack of effort rather than an inability to draw.

The subject was given a piece of plain paper, size $7\frac{3}{8} \times 5\frac{3}{8}$, and a pencil of B or HB grade. The instructions varied a little with the mental level of the subject : " Draw me a man—as good a man as you can draw. Draw all of him " is a fair sample. Great care was observed to avoid mentioning any part of the body by name. A little coaxing was sometimes required, and re-assurance had to be given to those patients who protested their inability to draw.

The test was usually given at the conclusion of a Binet test, the examiner, under cover of writing the Binet reports, maintaining an adequate but inconspicuous watch upon the subject at work. Such tests as the manikin, profile, or picture completion should not have been given that day.

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In giving the test as a group test the subjects must be widely spaced to prevent " copying ".

Data.

In all, 420 drawings from defective patients were studied. The criteria for use in studying the applicability of the Goodenough scale were that the subjects' ages should be between 16 and 40 years, and their " mental age " as measured by the Terman-Binet-Simon scale should lie between 5 and 9 years. The upper age-limit was imposed to exclude as far as possible deterioration and dementia. The lower limit of " mental age " was imposed by the nature of the Terman revision, which renders it unreliable for adults below that level. The upper " mental age " limit was imposed, partly because of the limited material available, and partly because in the highest grade, various influences —self-consciousness, lack of effort and the like—diminish the value of the test.

From 140 drawings (Series A) satisfying these conditions—27 were excluded from the statistical study upon the following grounds :

TABLE I.—*Rejections from Series A.*

Clinical psychosis	12 cases.
Special speech defect	5 ,,
Physical disability	3 ,,
Special ability	2 ,,
Effort failure	3 ,,
Unscorable	2 ,,
Total	27 cases.

The reasons for exclusion given in the table are mostly self-explanatory. In all cases it was considered that the factors named would invalidate one or other of the tests to be compared. For the purpose of the test " special ability " was taken to include all subjects who were known to draw for their own amusement. The term " effort failure " was applied to subjects who either refused the test altogether or who were obviously not making any real effort to succeed.

STATISTICAL ANALYSIS.

Goodenough (6) has published a careful and elaborate statistical analysis of her original study, affording conclusive proof of the value of her method. From that presentation the findings of principal interest here are as follows :

In a group of 194 children of first (*i.e.*, lowest) school grade the test-retest correlation was $\cdot 937 \pm \cdot 006$, whilst the average reliability for ages 5–10 was $\cdot 77$.

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The probable error of estimate of a true I.Q. earned on the drawing test is approximately 5·4 points at all ages from 5–10.

Both the drawing test and the Stanford Binet were given to a group of 334 children, æt. 4–10, including 24 children whose I.Qs. were below 70. Correlation of the results for the group showed R = ·741 ± ·016.

Yepsen (20) in 1929 gave the test to 37 defective boys, whose chronological ages ranged from 9 to 18 years, and whose mental ages (Terman) ranged from 4·8 to 11·2 years; he found a correlation of ·60 between the two tests. When the drawing test was given three times at four-day intervals, the following results were obtained: 1st test–2nd test, R. = ·89; 2nd test–3rd test, R. = ·91; 1st test–3rd test, R. = ·91. The variability very rarely exceeded 1·0 years.

The circumstances of the present study have not rendered possible a safe statistical evaluation of the reliability of the test, but here, too, the variability appears rarely to exceed one year in emotionally stable cases.

For the revised series (Series B) of 113 drawings in the present study the correlation with the Stanford Binet was ·48 ± ·07.* The correlation is, of course, lower than that obtained for normal children, but it is more than sufficiently close to justify the test, and to warrant its inclusion in a standard performance battery for patients of this class.

Comparison with Normal Children.

For purposes of comparison with normal children whose chronological age equals the mental age of the adult defectives, 25 drawings from each year-group were selected at random from the series used for correlation, their scores tabulated in terms of the percentage in each group succeeding with each point, and compared with Goodenough's similar tabulation of normal child subjects. The results in general agree closely, but in certain points there were marked differences and these are given in Table II.

From the table it will be seen that defectives succeed better in the illustration of such points as hair, ears, noses—in other words, representation of detail; whilst with the single exception of body length, the normals preponderate in correctness of proportion and in correct execution of the idea represented—in other words, in the integration of their knowledge. Their success in co-ordination is probably in part due to the fact that normal school-children are far better accustomed to handling pencils than are defective adults.

Qualitative Examination.

Purely qualitative examination of the entire series reveals further differences somewhat more subtle and hardly susceptible of tabulation, which are

* These figures were kindly calculated for me by Miss Usher, of the Psychological Department, London Child Guidance Clinic.

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TABLE II.—*Per cent. succeeding with Individual Points in Goodenough's Scale. M.D. Adults* versus *Normal Children.*

A. *Advantage with normals :*

Point No.	Description.	Year groups. (Terman age of M.Ds.—Life age of children.) 5. N.	5. D.	6. N.	6. D.	7. N.	7. D.	8. N.	8. D.
10 b	Fingers correct number	10	0	19	16	35	24	41	24
10 e	Hand shown	5	4	12	0	14	4	29	20
12 a	Head proportion correct	33	20	38	4	53	28	69	16
12 d	Feet proportion correct	27	24	42	32	60	44	64	36
12 e	Limbs in two dimensions	27	28	50	28	66	44	86	60
14 a	Co-ordination	18	4	35	12	54	44	77	32

B. *Advantage with defectives :*

4 b	Body length	22	72	33	72	42	88	49	92
5 b	Arm and leg attachments	9	24	12	24	24	48	33	56
6 b	Neck attachment	1	8	6	20	16	48	32	64
7 d	Nose and mouth in two dimensions	0	36	2	32	18	28	24	52
8 a	Hair present	13	24	16	48	22	52	45	68
15 a	Ear shown	10	52	24	52	27	52	28	44
16 a	Eyebrow	9	40	26	48	42	72	55	84

yet, as Burt claims, often sufficient in themselves to render possible a differentiation between the normal and the defective product. These differences have been summed up by Burt in the term " incoherence ". This incoherence can be analysed into several factors, especially into defects of proportion and position amongst the various elements which compose the whole.

Proportion.

Rouma, amongst others, noted that the proportions of the figures drawn improved with increasing age ; and he considered that the sense of proportion is closely connected with intelligence. In the drawings by defective children disproportion was a striking feature, and was more marked in the lower grades. The improvement in proportion in the growing child is least marked in the representation of the head, which remains disproportionately large, long after the size of the other members has settled to within normal limits. For this Rouma suggests the following reasons : (1) That the drawing of the head demands more work and affords more pleasure to the child, on account of the

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ease of effective representation of the various features ; (2) that the area which contains most objects tends to appear largest to the eye ; (3) finally, that the proportions of head to body in the child himself differ markedly from those in the adult.

The main difference in the findings in adult defectives is the greater disproportion in head size, and the relative superiority in the proportions of the trunk. In the case of the former, Rouma's first two reasons seem valid, though the third is obviously out of court. An additional reason operative in a few cases, and noted while observing the subject at work, is that the head is drawn first in the centre of the page and without regard to the rest of the figure, which has to be compressed to fit the paper.

Most important of all is the question of " interest " ; for Rouma has demonstrated the child's tendency to exaggerate that which is interesting to him—the head for instance. The trunk, however, is unimportant, a mere peg upon which to hang the head and limbs, representatives of action and interest (Levinstein).

The defective's lack of activity, or of interest in activity, is a commonplace of clinical experience ; in his drawings it is exceptional to find representation of activity in any form. For him, one may suppose, the static head and trunk have relatively more interest than for the normal child, and the limbs correspondingly less ; wherefore he draws the limbs small, the trunk correctly proportioned, and the head—with its wealth of detail—too large.

Position.

The spatial relationships are more important in low-grade than in high-grade drawings, for in the latter their relationships are little different from those of normal children or unskilled adults.

In the low-grade drawing the eyes may appear one above the other, or the head be drawn entirely separate from the face. These curious and chaotic drawings must not be taken as an indication of a similar chaos on the perceptual level. The behaviour of the subjects usually makes it abundantly clear that they appreciate the structure of the human form. The drawing is evidently a synthetic process, the subject adding detail after detail as they " come into his mind ". Bühler (1) advances a similar explanation for the drawings of the normal young child. " The fault lies not so much in a chaotic mind as in the errors of translating from knowledge—formulated in language—to the spatial order of pictorial representation." At the mode of formulation of knowledge in the low-grade defective one can only guess ; presumably such formulation is always very poor.

Fig. 1*a* is a marked example of such a drawing ; the meaning of the features is very difficult to determine ; yet this boy (Case 1) can recognize and distinguish between his fellow patients and the various members of the staff, and

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is employed at boot-repairing—of a simple order. His verbal ability is small. When he was asked to draw the various parts of the body by name he produced the drawing seen in Fig. 1*b*. The various parts are indicated as follows: (*a*) Face, (*b*) eyes, (*c*) body, (*d*) mouth, (*e*) arms, (*f*) legs, (*g*) feet.

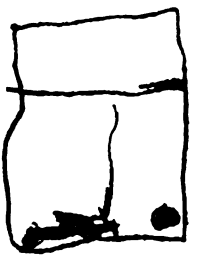

FIG. 1*a*.

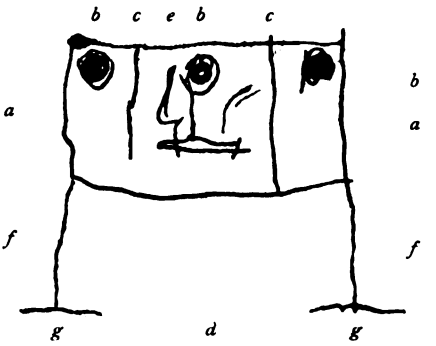

FIG. 1*b*.

Symmetry.

In the normal child's drawing the symmetry is remarkably good. Bühler (1) attributed this to the fact that symmetry is derived, not from optical impression, but from knowledge. The child knows that he has two equal arms, legs, etc., and accordingly draws them so.

Presumably the defective has a similar knowledge, yet in his drawings some degree of asymmetry is almost the rule, and of the 114 drawings in Series B, no fewer than 55 are noticeably asymmetrical. The phenomenon is commoner and more marked in the lower grades, and diminishes alike in frequence and in degree, with rising intelligence.

Scatter.

Measurement on the objective lines of Goodenough's scale does not show the combination of primitive and mature items in a single drawing—the width of scatter that is to say—to be either so common or so marked as other observers, notably Burt (2), have supposed. It seems probable that any marked scattering is always an index of emotional abnormality.

Irrelevant Detail.

In defective children Burt found certain other characteristics—wealth of irrelevant detail, elaborate treatment of the hair and so forth. This study has failed to confirm his findings—except as evidence of emotional disturbance.

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Self-Criticism.

It seems certain that many of the characteristics described in the preceding paragraphs are due to a lack of self-criticism. Many of these subjects, on having the disproportion or the asymmetry of their drawing pointed out to them, will draw a definitely improved figure with relative ease. In this connection it is noteworthy that very few of the subjects attempted to alter their drawings; though one or two, after a bad mistake, made a fresh start. Clinical experience supports the suggestion that the findings may represent a lack of self-criticism, an acceptance of things-as-they-are—a defect, that is to say, of emotion rather than of intellect.

Sex Differences.

Goodenough observed certain differences between the sexes in the drawings of normal children. In terms of drawing test score this difference was in favour of the girls, whereas earlier observers report a difference in favour of the boys. Goodenough considers the contradiction to be due to the different methods of evaluation employed.

Qualitatively Goodenough found important and interesting differences between the sexes. The principal of these is a tendency for girls to draw neat, " pretty " and rather static drawings with much detail; whilst the boys tend to draw in profile, to show better proportions, and to represent action. The most marked error of proportion made by the girls is the illustration of very large heads and very small feet; whilst the boys tend to the opposite extreme. The actual details showing these characteristics naturally vary with increasing complexity of the drawings.

No accurate comparison with Goodenough's findings is possible, partly because of the latitude allowed by the scale, and partly because of the small number of suitable drawings in this series. The main impression, however, is that while strongly masculine or strongly feminine types are rare in the defective, the general trend is towards femininity. This is principally because of the large head and small feet usually found in defectives' drawings, and also because of their static nature—characteristics of which the significance has been discussed in the section dealing with proportion. Some corroboration of the views therein expressed is supplied by Goodenough's suggestion that the boys' interest in physical activity may account for their exaggeration of the feet and limbs, as compared with the girls' tendency to minimize these parts. The same reason, she thinks, may account for the earlier change from full face to profile drawings which she finds amongst boys, and for their fondness for representing movement.

If these views are accepted, the apparent tendency to femininity is largely misleading, except amongst the psychopathic defectives, whose drawings will

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be considered in a later paragraph. Amongst the emotionally normal group the findings represent mainly emotional inertia.

Drawing as a Special Ability.

It is sometimes claimed that mental defectives have good drawing ability. This is certainly untrue, but on the other hand, it has been found that six patients show a drawing ability sufficiently above their general mental level to be classed as "special". In all six cases the ability was found to be more apparent than real. The subjects, with one exception, are known to have had considerable practice, and in all cases the ability is almost entirely for copying or for memory drawing; true artistic ability is not apparent. All the subjects were considered to be emotionally abnormal. Two of them were homosexual, two were markedly introverted (one showed mild schizophrenia); whilst three, including one of the homosexual subjects, were deteriorating epileptic types. None of the subjects were straightforward cases of primary amentia.

Case 2.—A. W—, male, age 31; mental age 8 years.

An apathetic schizoid type. He had some drawing lessons for about two years when in his teens. Spends much time in drawing. He copies magazine illustrations and photographs well and accurately. Has drawn an ink portrait of a fellow patient which is quite a good likeness. Can draw certain grotesque figures which are evidently from his imagination, but shows no ability whatever for artistic composition.

Case 3.—I. V—, age 25; mental age 7.

Known to be homosexual. He is unstable and has hysterical fits. His power of verbal expression is below his mental age level. His drawings show quite good line, but are very mechanical, and there is a strong resemblance between them all. His only subjects are, firstly, flowers arranged in a conventional bouquet, and secondly, the human figure. His figure drawings are strongly feminine in type. His ability evidently depends mainly upon the slowly acquired *cliché* of Rouma.

Case 4.—M. W—, adult male, epileptic; mental age, 5-6.

Silent and rather solitary. He is employed at boot-repairing, but is only fit for the simplest tasks. He copies illustrations from *Punch* quite creditably. His early history is unknown.

This is the patient referred to in a later section as showing perseveration when asked to draw a man without clothes; here again is seen the effect of the *cliché*.

Case 5.—E. A—, male, epileptic; age 17; mental age, 7 years 10 months.

A case of epileptic deterioration. He attended school and progressed normally until the age of 14. Epilepsy now severe. Has a verbal disability amounting at times to a paraphasia. He spends much time in drawing and copying illustrations from advertisement posters. Many of these are admirably done. Goodenough score, 10 years 3 months. His score would have been higher had he not started an elaborate composition which he was unable to finish properly. The figure contained much meticulous shading.

Case 6.—W. J—, male, epileptic; æt. 18; mental age, 5 years 6 months.

A case of epileptic deterioration; unstable, rather inaccessible, silent and suspicious. He is known to be homosexual. His test results show markedly visual bias. He copied the designs in Terman year 10. The Terman age is certainly too low; it is possible that he has a special verbal disability. He is slovenly and untidy, and unemployable except at simple ward work. His drawing

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of a man showed amazingly good line and was quite symmetrical (Fig. 2). The head was disproportionately large, the mouth of "Cupid's bow" type, clothes neatly arranged—all the characteristics of feminine drawing were beautifully shown. Asked where he learned to draw, he replied "at school". No further explanation could be obtained.

FIG. 2.

CASE 7.—T. R—, male, æt. 19; mental age, 10 years 4 months.

He is quiet, introverted, rather shy and dreamy in manner. He has a slight stammer, and for a period showed nocturnal enuresis. All his spare time and money are spent on reading. He is utterly lacking in ambition, and his practical ability is below the average for his intelligence level. He draws very little, but can draw crude caricatures to illustrate local jests. His drawings are quickly done and show surprisingly good line. They are strongly masculine in type.

EVIDENCES OF PSYCHOPATHY.

(a) *Adults.*

That the abnormalities of emotional life may find expression in drawing has long been known, and around the art of the insane quite a large literature has arisen. Réja (16), Kraepelin (10), Jaspers (8), Prinzhorn (15) and Lafora (11) have been among the principal contributors.

The findings vary somewhat with the type of patient observed and with the views of each particular observer. Discussion of the literature is beyond the scope of this paper, but the findings as to the characteristics of psychotic art may be summarized as follows:

(1) Marked over-elaboration and needless intricacy of design.

(2) Much symbolism, hieroglyphic, and occasionally the combination of drawing and writing.

(3) Stereotyped repetition of certain forms and lines.

(4) Crude sexual detail.

(5) Dissociation—as shown by fragmentation of the drawings and confusion of their elements.

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(6) Emphasis of unimportant or irrelevant detail.
(7) Meticulous accuracy.
(8) In certain schizophrenics a return to childish drawing standards.

(b) *Children.*

In a small number of Goodenough's children's drawings, certain curious features appeared which she summarized as follows:

(1) " Verbalist " type. Drawings contain much detail, but comparatively few ideas (Mateer) (13).

(2) " Individual response " type containing features inexplicable to any but the child himself.

(3) Evidence of flight of ideas—hair shown on one side of the head only, one ear omitted, etc. (Rouma).

(4) Unusual combination of primitive and mature characteristics in a single drawing (analogous to wide scattering on the Binet scale).

A *questionnaire* to the teachers revealed that the children in whose drawings these features occurred were apparently less stable than a control group.

In 14 children under treatment for psychopathic tendencies the most marked features were (1) drawings of the type usually obtained from children of opposite sex (7 cases), and (2) marked tendency to combine primitive and mature elements.

Three cases seen by the present author showed the tendency to wide scatter, two illustrated sex-organs, whilst one drew elaborate abstract designs and at times introduced symbols into his drawings of concrete objects.

(c) *Adult Defectives.*

Quite obviously the drawings of the defective adult psychotic, with his lack of artistic ability, his poverty of imagery, his low intelligence, and his more primitive reaction type, will differ from those of the psychotic of normal intellect. He cannot approach the amazing complexity or the richness of symbolism shown by certain of Prinzhorn's cases, for example. Certain drawings, however, obtained during the present study showed features which were considered both from their intrinsic nature, and from the type of patient in whose drawings they occurred, to be evidence of gross emotional abnormality, or actual psychosis. These features were: (1) Perseveration, (2) idio-significant detail, (3) sex inversion, (4) sex symbolism and detail, (5) dissociation, and (6) width of scatter.

Perseveration.

The occurrence of a stage of automatism or perseveration in the drawings of very young children has been remarked by Goodenough, by Eng (3), and others.

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Rouma (17) and Goodenough (7) also note that automatism occurs in older defectives or subnormal children, and Goodenough considers that in these cases the phenomenon is more truly automatic in character.

In the adult defective automatism or perseveration is not uncommon, but it would appear to be confined, apart from the very low grade, to the drawings of emotionally unstable and psychotic subjects, and to the epileptic.

The relationship between perseveration, psychosis and epilepsy is not clear. Stephenson (18) found a very low "p" factor in five psychotic epileptic "imbeciles". The intellectual level of his subjects was not further defined. Ewen (4), on the other hand, found high perseveration in a series of "insane" epileptics. The different findings may be due in part to the methods employed, and in part to an uncertainty as to the nature of the phenomenon measured.

In the adult epileptic defective, common experience, both in the test-room and the ward, shows that perseveration is much higher than in the non-epileptic. Such perseveration may show itself in ideation, in speech, in writing or drawing, or even in gross motor processes.

The findings from the present study are analysed in Table III.

TABLE III.—*Relation of Epilepsy to Perseveration.*

Clinical condition.	Number of cases.	Number showing perseveration.
Psychosis only	20	9
Psychosis with epilepsy . . .	14	7
Instability only	21	1
Instability with epilepsy . .	5	0
Epilepsy only	20	4

The four cases tabulated as "epilepsy only" are emotionally normal relative to their mental level.

Perseveration may be conveniently described under two headings—perseveration of form and perseverative elaboration of detail. This classification is somewhat arbitrary; essentially both types probably represent the same process, the first mentioned tending to occur in drawings of very simple type, whilst the second is found in those drawings—usually from higher grade psychotic subjects—which show detail. Intermediate and mixed forms also occur.

Perseveration of Form.

Perseveration of form is found usually in drawings from low-grade subjects. The small curve or circle seems to fascinate these people, and having made an eye or a mouth they may proceed to use the same form for other limbs and

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features. An extreme example of this is shown in Fig. 3, drawn by Case 8, a low-grade psychotic imbecile boy, æt. 20 (not measurable on the Terman scale). This lad drew first the rough outline, and then filled in first the eyes, next the curious circles above them, and finally the remainder of the drawing. In response to various questions he identified the various parts of the drawing as follows: (*a*) Eyes, (*b*) glasses, (*c*) ears, (*d*) mouth, (*e*) hands, (*f*) " belly ", (*g*) genitals, and (*h*) feet.

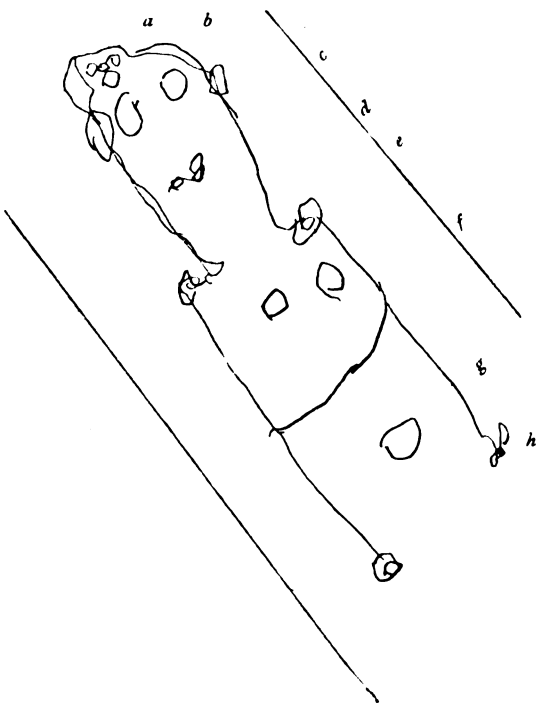

FIG. 3.

CASE 9.

Another striking example is that of a female epileptic, exceedingly unstable and having fleeting persecutory ideas; her mental age is 5 years 4 months. Her attempt to draw the diamond in year VII of the Terman scale is shown in Fig. 4*a*. Asked about two minutes later to draw a man, she drew Fig. 4*b*. Immediately afterwards she produced Fig. 4*c*. Told then to " draw anything you like—not a man ", she produced Fig. 4*d* and then Fig. 4*e*. Figs. 5*a* and 5*b* show similar subjects drawn a month later, without previous presentation of the diamond.

CASE 10.

A similar phenomenon was shown by a psychotic male, having a mental age of 4 years 3 months. He was given the test one minute after copying the square in year IV of the Terman scale, with the result shown in Fig. 6.

CASE 11.

This case illustrates the relationship of perseveration to emotion and effort. A. W—, æt. 30, epileptic imbecile with special ability as a copyist. This subject drew men to a stereotyped formula, quickly, easily and well. Suddenly told to

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draw a man with no clothes on, he produced the usual head and arms very quickly. He then slowed down and showed obvious bewilderment, finally drawing a crude oblong " body ", adding a second, a third and even a fourth before he appeared to realize what he had done.

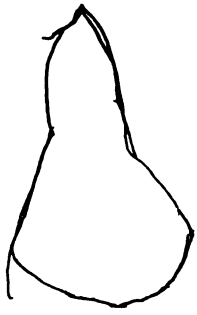

FIG. 4*a*.

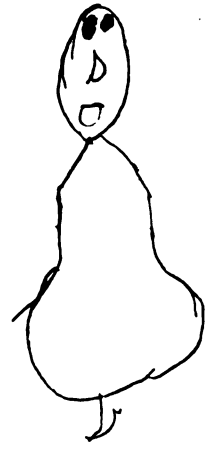

FIG. 4*b*.

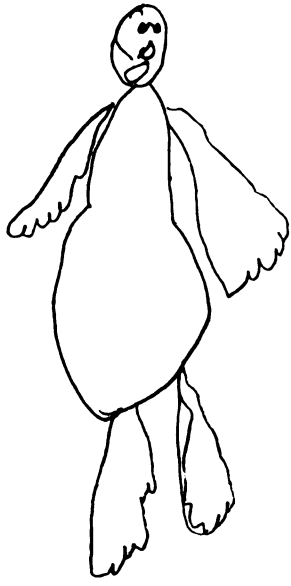

FIG. 4*c*.

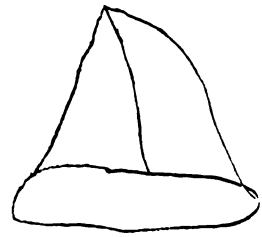

FIG. 4*d*.

FIG. 4*e*.

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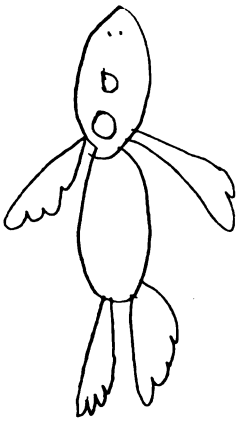

FIG. 5*a*.

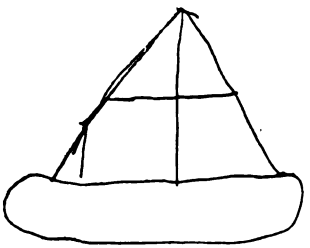

FIG. 5*b*.

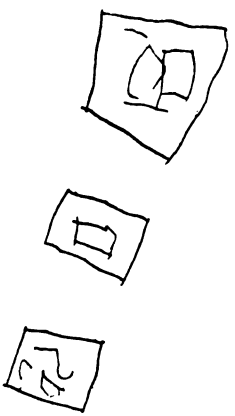

FIG. 6.

Perseverative Elaboration.

Perseverative elaboration of detail is commoner amongst higher-grade and usually grossly psychotic subjects. In this type some feature, or limb, or detail of clothing, represented frequently in a stylized and symbolic fashion, is stressed out of all proportion to its importance, elaborated and repeated again and again, until in marked cases its original form becomes unrecognizable. From a hand decorated with five prominent fingers complete with nails may spring another hand similarly adorned ; hair may be close curled and extended to surround the entire face ; eyelashes may deform the eyes ; teeth cover the entire trunk.

This type of perseveration may show itself in shading, and here one sees

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the importance of watching the subject at work ; for in some cases the finished drawing shows nothing but a heavily-shaded figure, whereas observation of the work in progress shows the shading starting lightly in one area, and extended very slowly and painstakingly outside the limits of the limb or garment on which it first appeared, covering, it may be, carefully drawn detail, worked over again and again, until finally the whole drawing is shaded black (Figs. 8, 11).

Repetitive Drawing.

Three subjects—all low-grade psychotics—covered the entire paper with little manikins in response to the instruction " Draw me a man ! " The phenomenon is probably a form of perseverative elaboration.

Flight of Ideas.

Exactly opposed to perseveration is the so-called " flight of ideas " seen in maniacal patients. Goodenough considered that certain types of drawing of her subjects showed this—drawing of one ear and omission of the other, etc. In the present series it has not been found possible to find satisfactory evidence of the phenomenon, though part of the scattering seen in some unstable patients' drawings may arise from some such cause. Some drawings from excitable and unstable subjects who are not definitely psychotic show a " wildness " of line which may have a similar origin, or which may be wholly or partly due to muscular inco-ordination. Neither phenomenon has been included as evidence in Table IV.

Idio-significant Detail.

In the course of the study nine subjects produced drawings showing bizarre and incomprehensible details, somewhat similar to those reported by Goodenough as indications of psychopathic tendencies in children of normal intelligence, analogous, that is to say, to the " individual " type of response occasionally obtained in the Kent-Rosanoff test.

These curious effects apparently had some definite meaning for the subjects, for they appeared constantly in drawings taken on several different occasions.

The idio-significant details—for the subjects were never able to explain their meaning—were accompanied in 6 out of the 9 cases by the elaboration type of perseveration. The subjects all showed gross emotional abnormality and, with one exception, were known to be psychotic. Fig. 11 is an example.

Sex Inversion.

Twelve subjects produced drawings showing inversion of sex characters—7 males producing typically feminine, and 5 females typically masculine

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drawings. Eight of these—5 males and 3 females—showed other signs of psychopathy in their drawings (Figs. 2, 7, 8, 9, 13). In the series of 113 drawings used for correlation—from which clinical psychotics were excluded—2 subjects, both males, showed inversion. One of these is grossly unstable; the other is quite normal for his intellectual level.

FIG. 7.

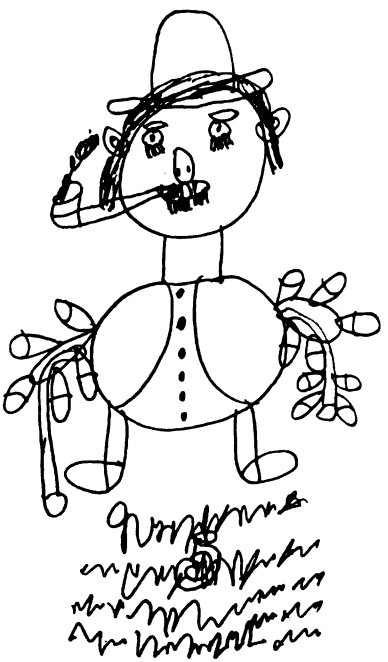

FIG. 8.

FIG. 9.

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Sexual Symbolism.

Two of the subjects illustrate sex-organs. Both these cases are psychotic, one being hallucinated. Both drawings showed gross perseveration of form, whilst the hallucinated subject showed also perseverative elaboration and scribbled shading.

Two other patients, both epiloiacs, illustrated curious sexual symbols. The first of these is illustrated in Fig. 8 (Case 12); the elaborated fingers are considered to be unquestionably phallic. This boy is fond of drawing; has executed many drawings for the author, all of the same type. The second subject (Case 13) was a girl who was semi-stuporose and whose drawing was executed very slowly (Fig. 9). The " male " triangle at the top of the trousers was added very slowly indeed and after a very long pause. Questioned, she described this as his " pister ".

Dissociative Drawings.

Several drawings from psychotic subjects were suggestive of dissociation, and two of these were utterly incomprehensible.

Case 14.—W. C—, male, æt. 34. Known to be psychotic and thought to have auditory hallucinations. Silent, solitary and verbally inaccessible, but quite

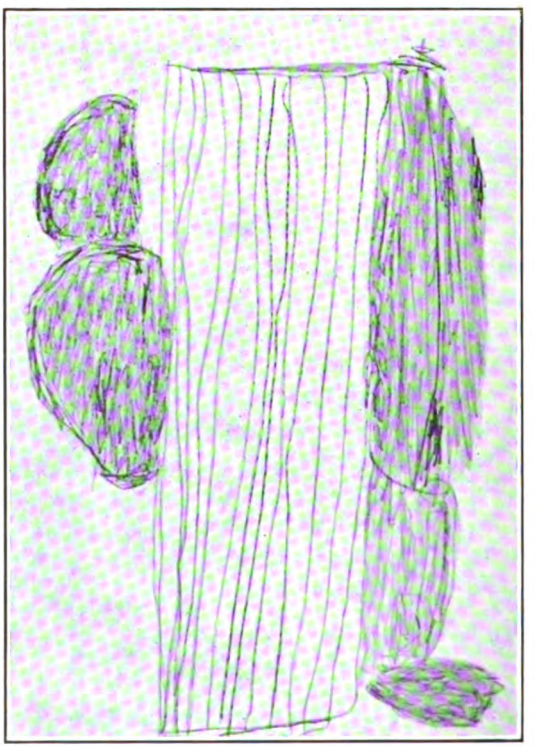

Fig. 10.

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docile and employable at simple tasks. He at first refused to attempt the test, but on being told to draw an official of the institution (named) he set to work busily and purposively and with no trace of hesitation. The drawing (Fig. 10) shows quite a lot of care in design and execution. No other drawing can be obtained from him.

Stylized Drawings.

These subjects produced drawings curiously stylized, all three showing relatively good draughtsmanship, but resembling conventional decoration rather than the actual human figures. The most remarkable of these (Case 16), a psychotic epileptic girl of 24, produced some strange drawings, one of which is shown in Fig. 11.

FIG. 11.

The picture took over two hours to draw, and shows a bizarre and stylized effect with marked perseverative shading and idio-significant detail. The subject would not or could not discuss the drawing.

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Drawing and Writing.

Three psychotic subjects introduced writing into their drawings. Two of these placed several lines of " pseudo-writing " beneath their figures, whilst the third—a demented schizophrene—introduced written letters as an integral part of the face (Fig. 12).

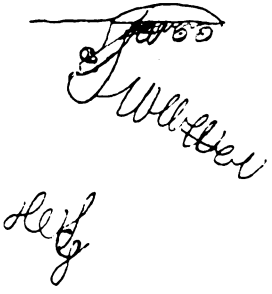

FIG. 12.

Drawings of Psychotics.

In all, 34 drawings were obtained from known psychotic subjects, all of schizophrenic reaction type. The findings, which are analysed in Table IV, show at once that whilst markedly perseverative and idio-significant drawing is always associated with gross abnormality, the converse is by no means the case, for of these 34 drawings, 9 were of the ordinary type obtained from non-psychotic subjects of corresponding degree of intelligence.

The reason why some psychotics show evidence of their psychosis in their drawings, whilst others do not, is hard to discover. It is possible that, as in the normal, subjects who are visualists in imagination find in drawing a means of emotional expression, whilst the auditives are unable to do so. In every mental hospital one sees patients who spend much time in drawing—sometimes of quite a high standard. Case 12 in the present series, a katatonic epiloiac, who is practically mute, appears to have a strong urge to draw (Fig. 8). Deprived of paper, he will go to infinite trouble to scratch his drawings, which show all the indications of psychosis, upon woodwork or linoleum with a piece of wire.

Unstable Types.

Certain of the features which have been described in the preceding paragraphs appeared also in defectives known to be highly unstable, though not actually psychotic. These are analysed, together with the true psychotics, in Table IV. Here again, as with the psychotics, the converse does not hold,

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several highly unstable subjects showing no distinctive features in their drawings.

Fig. 13 shows a remarkable example of drawing obtained from an extremely unstable male adult whose mental age (Terman-Binet) is 8 years 9 months (Case 17). The line of the drawing is very good, but asymmetry and disproportion are marked. The features are well drawn, but the neck is omitted. The buttons are elaborately drawn, though the clothing is barely indicated.

Fig. 13.

The shading of the hair and down the sides of the trunk is almost perseverative in type. Finally, the figure shows all the typical signs of femininity.

The findings for the whole of the emotionally abnormal group are analysed in Table IV.

In addition to the characters listed in the table, one finds that many drawings from this group show certain qualities too ill-defined for tabulation. Principal amongst these is a combination of primitive and mature items in a single drawing—a "scatter", that is to say, far wider than the average for the subjects' mental age. Some cases, too, show a meticulous attention to detail and particularly to shading; this is commonest in high-grade "introvert" types. Lastly comes a failure of effort—either a blank refusal of the test, or

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the hasty drawing of a crude scribble; or, as in three unstable males, the starting of an elaborate outline which they failed to complete.

TABLE IV.—*Indications of Psychopathy.*

Drawing features.	Psychosis, 33 cases.	Instability, 26 cases.	Epilepsy alone, 20 cases.*	Totals.
Perseveration of form	10	..	4	14
Perseveration of detail	6	1	..	7
Repetitive drawing	3	..	..	3
Abnormal shading†	3	6	..	9
Dissociation	3	..	..	3
Idio-significant detail	8	1	..	9
Sex inversion	6	6	..	12
Sex-organs	2	..	..	2
Sex symbolism	2	..	..	2
Stylized drawing	2	1	..	3
Effort failure	1	2	..	3
"Normal" drawing‡	9	8	6	23

* Emotionally stable defectives.

† On account of the difficulty of differentiation between perseverative and meticulous types of shading both groups have been included under this heading.

‡ "Normal" for intellectual level.

Value of Drawing as Evidence of Emotional Abnormality.

It is to be noted that the value of drawings as evidence of emotional abnormality is strictly limited; and that while the definite presence of the characters described above is strong evidence of psychosis or instability, their absence has no diagnostic value. Moreover, even when present, their value is purely qualitative, and drawings by themselves give little indication of the depth or severity of the condition present.

SUMMARY AND CONCLUSIONS.

In a study of the drawings of 420 adult mental defectives the following conclusions are reached:

(1) The Goodenough drawing test is a useful component for a performance battery for these patients.

(2) In a group of 113 subjects whose mental ages lie between 5 years and 9 years, the coefficient of correlation between this test and the Stanford-Binet is $+ \cdot 48 \pm \cdot 07$.

(3) Compared with normal children of similar intelligence, defectives excel in representation of detail, but are markedly deficient in correctness of proportion, and of spatial orientation; their drawings display a certain "incoherence".

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(4) Defectives' drawings are of static type, and tend towards femininity.

(5) A special ability for drawing is uncommon in defectives. The ability is more apparent than real, and true artistic talent does not occur.

(6) The drawings of psychotic and unstable subjects frequently show distinctive features, notably perseveration, idio-significant detail and marked sex inversion.

I am indebted to Dr. J. K. C. Laing, Medical Superintendent of Darenth Training Colony, for permission to examine and record one of the cases here reported. For the remainder, I am indebted to Dr. T. Lindsay, Medical Superintendent of Caterham Mental Hospital.

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THE MONGOL: A NEW EXPLANATION.

(Fourth Communication.)

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IT is now recognized that mongolism results from defects inherent in the germ-plasm. This has been proved by numerous observers, including Bauer, Orel, Halbertsma, Brousseau and others, who have investigated the occurrence of mongolism in uniovular and biovular twins.

Halbertsma argued that if twins are homologous " germinal affections will be equally present in both ", and he and others have found that " cases of twin mongols of different sex do not exist ". He is of opinion that mongolism is germinal in its origin, and not acquired during intra-uterine life. Strauch concluded that " an endogenic factor exists in one of the gametes in the ætiology of mongolism ". Brousseau states, " This theory of defects inherent in the germ-plasm can alone explain the existence of mongolism in one twin while the other is altogether normal both mentally and physically ".

These somewhat recently recognized findings have by some been considered to be in conflict with the explanation of mongolism, published in a series of three short papers in this Journal a few years ago under the above heading. I have frequently been told so, and I have been asked by one of the above-mentioned authorities if I would in another paper account for the occurrence of mongolism in one only of twins. Further, it has been stated* " that it is hardly conceivable that, on Clark's hypothesis, one embryo only should have been subjected to an excess of thyroid secretion . . . ". " The theory breaks down in fact beneath its own weight." The explanation I gave to account for mongolism was, briefly, " a fœtal hyperthyroidism ceasing at birth ". I used the term " hyperthyroidism " as synonymous with Graves' disease, or exophthalmic goitre, and to avoid conveying the idea of a simple overflow of thyroid secretion from mother to fœtus, I mentioned the possibility of over-susceptibility of the fœtus to thyroid hormone, but I did not discuss the cause, for the reason that " the cause of exophthalmic goitre is not known ".

My contention is that mongolism is the aftermath of fœtal Graves' disease, and the problem of the mongol is the problem of Graves' disease. If this is

* Crookshank.

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so, the ætiology and origin of Graves' disease and mongolism will be the same; if different my contention is wrong. Have, then, these two diseases the same origin and ætiology? A definite and complete answer to this question may not be available, but there is evidence to show that both diseases twin as other germinal diseases, proving the germinal origin of both diseases; there is also support for the view that the factor in the germ responsible for both diseases is a hereditary factor. Reference to literature on these questions shows that authoritative opinion favours the view that heredity is the fundamental cause of Graves' disease, and that the onset of the manifestations of the disease is finally brought about by such factors as infection, sexual disturbances, shock, worry or mental strain. If Graves' disease is hereditary it must be germinal in origin, and should present itself in twins in the same way as mongolism and other diseases of germinal origin.

Of mongolism it can be said definitely that it twins in germinal fashion, and is therefore of germinal origin; the ætiology and origin of mongolism and Graves' disease, then, are similar, indeed they may be identical if the germinal defect responsible for mongolism is a hereditary factor. A number of observers do hold that mongolism is a hereditary disease, but this cannot be said to be the generally accepted view. The sterility of the mongol at first sight appears to negative heredity, but recent proof of the germinal origin of this disease and the possibility of its being the intra-uterine form of exophthalmic goitre require re-examination of the question, What part does heredity play in the ætiology of mongolism? There is evidence that, in addition to heredity, external factors are concerned in the cause of mongolism, so that environmental factors play a part in the ætiology of both diseases. When mongolism occurs in twins it always presents itself in both twins, if the twins are uniovular, but in one only if biovular. This is strong proof that the germinal defect is the essential and major factor in the ætiology of mongolism.

The hereditary factor may be a unit character, it may be connected with the endocrine system, the periphery, the central or autonomic nervous system. Such a factor seems more likely to bring about a definite and familial disease, such as exophthalmic goitre, than the imaginary "neuropathic" or "morbid" hereditary factor so often suggested.

There is much to justify one in saying that what is true of mongolism as regards origin and ætiology is also true of exophthalmic goitre. Following the line of investigation which proved the origin of mongolism, I find in the literature the following reports of exophthalmic goitre occurring in twins. Glatzel reports:

(1) Morbus Basedowii in one of dissimilar twins, æt. 18, the brother being healthy and normal.

(2) Uniovular twins, æt. 11, enlarged soft thyroid in both.

(3) Biovular twins; in one sister, at age of 32, morbus Basedowii has developed; the other is free from all such symptoms.

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Neff records exophthalmic goitre in homologous twin girls. The disease was noted in one at 8 and in the other at 10 years of age.

It will be observed that in every case exophthalmic goitre has occurred in twins as germinal diseases do.

The statistics are small but significant, and coincidence is not likely to explain them.

In the opinion of many authorities it is an hereditary factor in the germ plasm which plays the important part in the production of exophthalmic goitre. A large number of families have been reported in which the disease has occurred in more than one member of the same generation, and in several members of successive generations. In two families reported by Cantilena and Sottas, the disease affected parent, child and grandchild. Rosenberg reported a family in which the father and two daughters suffered from the disease, the younger daughter married a man whose mother and two sisters had Graves' disease, and of their family of 11, 10 were stillborn or died in infancy and only 1 survived. Osterraicher recorded a family in which Graves' disease appeared in three generations, and affected 11 out of 16 members of the family. Many other somewhat similar family histories have been recorded. Cockayne has shown that the phenomenon of anticipation common in other hereditary diseases is also shown in the transmission of exophthalmic goitre, and he quotes from other observers examples of families presenting the disease in this way, *e.g.*, in a mother the disease began at the age of 33, was fully developed in her daughters at 27 and 25, and earlier still in her two sons. In Climenko's family it appeared at 39 in the parent, at 27 in the child, and at 10 and 6 in two grandchildren. Cockayne has also shown that exophthalmic goitre is frequently transmitted through apparently healthy individuals—the disease may be present in several children whilst the parents appear to be healthy. Cockayne is of opinion that a constitutional weakness of the thyroid gland or a thyroid diathesis is inherited. Morrison considers there is a strong familial predisposition to exophthalmic goitre. Fraser believes in a constitutional factor which may be inherited and inborn. Warthin is of opinion that all cases of exophthalmic goitre possess a definite pathological constitution. Many more hold similar views.

Much that has been written in favour of an hereditary factor playing the fundamental part in the production of exophthalmic goitre can be said of mongolism. Mongolism has been shown definitely to have its origin in the germ-plasm. It shows the same tendency to occur as a familial disease. Sisters, brothers and cousins are to be found affected, and, taking into consideration that mongols have no offspring and therefore never appear as parent in pedigrees, it is remarkable how similar the family tendency is in these two diseases. Much better proof of heredity may be forthcoming if the connection between exophthalmic goitre and mongolism is recognized. Orel reviewed the literature up to 1926, and reported 19 cases of familial mongolism. Since

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then, Brousseau has contributed another list, and other instances of 2 and more mongols occurring in a family have been reported. The following reports are of interest. Babonneix and Vilette recorded 4 mongols in one family; the mother had 2 miscarriages during the first years of marriage, and out of 10 children born viable, 6 died in infancy. The 4 surviving children were mongols.

Borovsky, in 1928, observed 3 female mongols, the offspring of two sisters. In one of these families the father had married previously and had 5 normal children by his first wife; all four parents were healthy and showed no endocrine or nervous disorder. In 1917 Ch. Herrmann reported two mongols in one family. The mother married twice. The child by her first husband was normal. By her second husband she had three children, the first a mongol, the second a normal child and the third a mongol. Both parents were healthy, and the mother perfectly well during all her pregnancies. Herrmann adds, "it is hardly conceivable that a constitutional disease in the mother, which gave no symptoms, could produce alternately a normal child and a mongolian imbecile". (In exophthalmic goitre families, parallel cases to this occur not infrequently.)

Herrmann has stated that the evidence that mongolian imbecility is a unit character and recessive, although not conclusive, is certainly suggestive. Bauer believes that the cause of mongolism is much more likely to be genotypical than paratypical. Penrose says, "there is strong evidence that mongolism is due to heredity . . . . There seems to be a good *prima facie* case for regarding susceptibility to the condition as hereditarily determined . . . it is concluded that if due allowance be made for environment the proportion of susceptible individuals must be very much higher than is usually supposed in infected families". Since mongols do not bear children, the tainted genes must die with the mongol, and, unless there is another source, the disease would become extinct. But it does not, and the question arises, Where do these tainted genes come from? Supporting the view that mongolism is intra-uterine exophthalmic goitre, it is suggested that the genes producing mongolism may be the genes holding the hereditary factor of exophthalmic goitre. It will be asked why more cases of exophthalmic goitre are not reported in families producing mongols. This may be because complete pedigrees are rarely given, and because the hereditary factor is often transmitted by apparently healthy parents. On the other hand, it is possible that many of the offspring of those who transmit exophthalmic goitre—premature infants and those dying in early infancy—suffer from mongolism. The disease must often be missed in such cases, for it is known that attention is often first called to a mongol infant's condition at about the age of twelve months. Valuable information might be obtained by following up the histories of the sisters, brothers and cousins of mongols and their offspring. Mongols die young, and little is known of the adults of their own and future generations.

Further support for an hereditary factor in the ætiology of mongolism has

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been recognized in the uniform picture mongolism presents, and the resemblance between one mongol and another. Certainly this uniformity and resemblance is more likely to be brought about by something particular than by something general.

The resemblance between mongols is often remarkable: "they appear to be members of the same family, and parents sometimes fail to recognize their own children in a group of this type". A hereditary explanation of itself fails to explain this resemblance unless the ancestor whose likeness is transmitted is revealed. On the other hand, the exophthalmic goitre theory explains this resemblance thus: the face of every mongol is disguised during fœtal life, because a mask bearing the distinctive features of exophthalmic goitre is impressed upon it.

Since it has become known that the pathogenesis of mongolism is in the germ-plasm, many causes which formerly seemed possible can be excluded. It has been suggested that such causes as ovarian degeneration or immaturity, exhaustion of procreative powers, defective developmental impulse, environmental effects on the germ, also shock, fright and mental worry, and those conditions in the pregnant mother obtaining at the end of a large family and the approaching climacteric, may be the cause of mongolism. But these factors must be regarded as minor ones, for such conditions cannot of themselves explain how the uniformity, the resemblance, the brachycephalic head, the changes in and around the orbits and the many other distinctive features of the mongol are brought about. Some further explanation is required. The non-essential character of some of these conditions is also evident since the disease is known to occur without them. Again, if Jansen and Van der Scheer are right, mongolism commences about the sixth or seventh week of intra-uterine life, so that some of these conditions above mentioned, *e.g.*, ovarian degeneration, exhaustion of procreative powers, and other environmental factors acting on the germ may be excluded, leaving those conditions which affect the pregnant mother as the possible determining factors, *i.e.*, fright, shock or worry, conditions in the pregnant mother over 40 following a long series of pregnancies and approaching the climacteric, and other conditions which may bring about endocrine imbalance.

It has been stated that it is impossible to conceive exophthalmic goitre occurring in one only of twins *in utero*, as mongolism is known to occur and as exophthalmic goitre occurs after birth in biovular twinning. Reports have been mentioned showing that in adult life, and also in childhood, exophthalmic goitre occurs in both twins in uniovular and in one only of twins in biovular twinning. Why should not further anticipation occur and the same rule be followed *in utero*? The difficulty apparently arises through under-estimating the possibility and importance of a hereditary factor being present in one fœtus and absent in the other, or it may be that the importance of the thyroid secretion in the ætiology of exophthalmic goitre is overestimated.

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A consideration of the following views on the ætiology of exophthalmic goitre will show that in biovular twins one fœtus may have exophthalmic goitre and the other be not so affected.

Warthin's theory of the cause of Graves' disease appears to be gaining favour in this country and in America, and perhaps more pronouncedly so in Germany and Italy. Briefly stated, it postulates that sufferers from Graves' disease present a definite pathological constitutional entity which is predetermined at birth, and only those possessing it will develop Graves' disease. The potentiality may, however, remain latent or quiescent during the whole or large part of the subject's life. Warthin prefers the term "Graves' constitution" in the absence of any convincing proof that thyroid hypersecretion is the ætiological factor. Further support comes from other authorities; some doubt whether Graves' disease is a disease of the thyroid at all, arguing that thyroid pathology and goitre symptomatology cannot be accurately correlated, and most of the symptoms of Graves' disease may be present without goitre. Again, Zondek holds that the hormonal factor in endocrine diseases is overestimated: "endocrine diseases may proceed from varied points of the hormonal system, including the nervous system and the periphery. Basedow's disease does not proceed from the thyroid". Bram expresses similar views, and states that when thyroid swelling exists it is not the cause of the disease, but incident to a series of events constituting the syndrome. Now, if these views are correct, it is difficult to understand how exophthalmic goitre can occur in biovular twins *in utero* in any other way than mongolism presents itself, *i.e.*, one fœtus may suffer from exophthalmic goitre or its aftermath, and the other be not so affected. I leave out of consideration the very rare possibility of two mongols occurring in a biovular twin birth, which does not appear to have been recorded so far. Environmental factors undoubtedly play a part at least in determining the onset of both exophthalmic goitre and mongolism. If Warthin is right and the potentiality to exophthalmic goitre is inborn, yet may remain latent for life, then a secondary factor must be necessary to determine the onset of the disease. The difference in the age at onset of the disease in uniovular twins may be similarly explained; in one pair of uniovular twins exophthalmic goitre commenced in one twin at the age of eight and in the other at the age of ten. Clinical observation, too, strongly favours a secondary ætiological factor in determining onset. The environmental factors which precipitate the onset of exophthalmic goitre *in utero* may be different from those which bring about the disease after birth, and yet it is significant that the factors commonly believed to bring about the manifestations of exophthalmic goitre in the adult are shock, fright and mental worry, and these same conditions in the pregnant mother are said to be a cause of mongolism. Comby observed worry, fright or shock during the early months of pregnancy in 43 out of 70 mothers of mongols.

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Secondary factors in the ætiology of mongolism have already been mentioned, and that they play a part in determining the onset of the disease is supported by the fact that the mongol has a special position in the family. If mongolism were a purely hereditary disease the mongol would occupy no special position, for genetic law can have nothing to do with position in the family. But the contrary is the case. Shuttleworth in 1886 pointed out that nearly one half of mongols were the last born of a long family ; which of the factors, the advanced age of the mother or her exhaustion by previous pregnancies or her approach to the climacteric is the most potent, he left in doubt. Spicer observed that mongols came often at the end of a large family, but did not consider this an important ætiological factor, since several of his cases were the first children of young mothers. Hill found that 50% of mongols were late members of a large family and born after the mother had reached 40. He believes, however, that the most potent cause of mongolism is the presence of some depressing influence during the gestation period of the mother. Turner and Penrose, after a careful statistical study of this question, point to a marked deficit of first-born mongols as compared with expectation. In a more recent contribution Penrose shows clearly that " the incidence of mongolism increases with the maternal age, the only exception being that there is a greater incidence amongst pregnancies before the age of 25 than between the ages of 25 and 34. There seems, in fact, to be a definite inverse relation between the frequency of the condition and the child-bearing activity of the mother ". It is just possible that this finding may be connected with " Graves' constitution ", for Warthin points out that in those possessing the " Graves' constitution " the period of reproductive ability is much shortened although fertility is undiminished.

Making use of the figures just quoted from Penrose and assuming my proposition to be correct, it follows that there will be a higher incidence of those born susceptible to exophthalmic goitre in pregnancies between the ages of 25 and 34 than outside this period, and in consequence the exophthalmic goitre patient might be expected to occupy this approximately mid-position in the family. Evidence of this has not been found in the literature, and it may be that those in whom Warthin states the disease remains latent throughout life rectify the incidence, so that the exophthalmic goitre patient may occupy no position in the family and thus conform to genetic law.

It is reasonable to conclude that in mongolism, as in Graves' disease, a susceptibility to the condition is inherited. Determining factors are, as in Graves' disease, shock, fright, mental worry, sexual disturbances, or those conditions present in a pregnant mother, over 40 years of age, after a long series of pregnancies and approaching the climacteric (these conditions probably give rise to maternal endocrine disturbance). In any case the latter appears to be a potent determining factor, and gives the mongol a position in the family such as Penrose describes.

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As regards the ætiology of mongolism, authoritative opinion is at the moment divided; some favour heredity, others prenatal environmental conditions. If my thesis is accepted, both are right.

For many years mongolism and exophthalmic goitre have been considered quite distinct and different diseases, and as such they have been subjected to very careful observation and critical examination, and the accumulating facts point now, more than ever, to the possibility that these diseases are the same disease—that mongolism is the result of fœtal exophthalmic goitre.

Consideration of the facts presented seems to justify the following deductions: Exophthalmic goitre may occur *in utero* just as it does in after life, for the necessary hereditary factor and environmental conditions are at times both present *in utero*. When exophthalmic goitre occurs *in utero* in twins, it will present itself in uniovular and biovular twins in the same way as mongolism: in both exophthalmic goitre and mongolism a susceptibility is inherited; the determining factors in both diseases seem to be the same environmental conditions. In mongolism the environmental condition ceases at birth.

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ON THE ACTION OF BARBITURIC ACID COMPOUNDS.

A CONTRIBUTION TO THE PROLONGED NARCOSIS TREATMENT OF MENTAL SYMPTOMS.

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INTRODUCTION.

SINCE 1922, when Kläsi's work on prolonged narcosis with somnifen—a mixture of barbitals*—appeared, this form of treatment has become an integral part of the armamentarium of psychiatry. Patients suffering from various psychoses were subjected for a longer or shorter period to intoxication by a hypnotic, with or without the production of a prolonged sleep. Successes—sometimes very great successes—were claimed for this treatment. The number of publications on this subject is so large and the successes described therein so numerous, that the clinical worker is in duty bound to form an independent opinion regarding this method. The question is whether there is anything in this therapeutic method which psychiatry should retain, what that something is, and whether or not we can improve its system of procedure. Too great an enthusiasm is equally dangerous here, as is underrating the method because of a single unfortunate experience during or following the treatment.

There is no doubt that long-continued treatment with barbitals may produce important therapeutic results. The conviction of the truth of this is grounded not only on the writer's personal experience gained during five years' work in treating psychotic patients, but also on a critical study of the literature of the subject, regarding which last more will be said later.

We do not, however, know with any certainty how the treatment works, to what stage and in what diseases it is best applied, what is the optimum dosage, and how long the treatment should be proceeded with.

We are entirely dependent in solving these problems on our experience with patients. This can only be effective after long-continued collecting of data, for when studying therapeutic results in connection with the higher psychic functions rapid experiments will not help us.

When we study the working of hypnotics on psychotic patients, especially

* The term "barbital" will be used throughout this article to designate any one of the barbituric acid derivatives employed as hypnotics.

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in the case of this treatment by prolonged narcosis, there are two kinds of knowledge we must be careful to separate from one another, namely, our theoretical conception of the method and the practical methods to be applied. The question of how we picture to ourselves the action of these remedies, is not the same as the question of how we shall conduct a barbital cure. It may be that the practical and empirical aspect of the question will be largely solved before we can even touch the theory of it. The success achieved with malaria therapy in dementia paralytica is an example of the same thing. Here is a method of treatment we should be sorry not to possess, but opinions still differ very greatly as to its theoretical explanation.

Treatment by barbitals originated in the theory that long-continued sleep on the part of the sufferer from a psychosis would facilitate contact between him and the psychotherapist, a contact which had proved impossible in the face of motor restlessness, hallucinations and similar phenomena.

Successful results were achieved when this theory was worked out practically by Kläsi, but the records show (1) that it very soon became evident that these results came to pass without the required sleep and without the psycho-therapeutic contact. The original theory had to be abandoned, and the question remained whether these new facts, based on the experience of success after barbital intoxication, were of sufficient value to be worked up into a reasonable therapeutic system.

Side by side with the many successful results there have also been sudden and unexpected accidents. This is due to the fact that no thoroughly well-thought-out technique exists as yet in connection with these cures. The remedies are applied, and success is often sudden and unexpected, now occurring during the treatment, and then again a few days after it—no one knows why. Statistics are made use of in our literature as pleading for the particular technique used in each case. The figures cited are usually small; I have not been able to find the record of any experience dealing with more than one hundred cases. It is safe to say, therefore, that the value of these figures is comparatively small. Sometimes in the present uncertain state of our psychopathological conceptions a record of the non-essentials of a case is of more significance to us in understanding it than is a fictitious figure recording therapeutic successes.

Such being the state of affairs, the difficulty is, not to throw out the baby with the bath. If we want to achieve successes in a systematic way, we must do more than count and note them down. We must ask ourselves under what conditions these successful results appear, what concomitant processes are to be noted, how long the intoxication which produces a cure lasts and how strong it is, and what are the psychoses which have proved susceptible to this kind of treatment. We do not know, for instance, what are the somatic parallel processes characteristic of certain psychoses. The need of studying artificial intoxication by barbitals in other ways is therefore obvious.

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The data for our study are supplied in all kinds of ways. First of all there are the somatic parallel processes of psychoses disclosed by clinical observation and the secondary neurological symptoms during the barbital cure. Literature, and occasionally one's personal observation, supply a large number of cases of suicide by barbitals, cases of addiction, of accidental deaths, etc. Much material has also been collected by the pathological-anatomical study of such cases.

Our study has a twofold task to perform ; it calls to our attention incidental effects which we must try to avoid in the future. Thus practical therapy is benefited by it. But it also familiarizes us with the various kinds of psycho-pathological phenomena produced by a given therapeutic method—phenomena the ætiology of which is not clear. Hence theoretical psycho-pathology is also benefited by a study of the facts, which a comparative clinical investigation will supply. In order to insure a right interpretation of these facts, it is necessary for us to bring our researches within the sphere of interest of the psycho-pathologist, so as to pre-determine the limits within which the conclusions we may eventually draw from them must remain.

The question of the action of poisons on normal and on abnormal persons belongs to a very special department of psychiatry—a department regarding which the last word has not nearly been said. Since a knowledge of ætiology was lacking as a basis on which our psycho-pathological conceptions of the nature of diseases might be grounded, it was but natural that the psychoses which were produced by certain well-known poisons should have been studied with the greatest attention. One of the first subjects to be studied in psychiatry with accuracy and care was that of the alcoholic psychoses, and with this as an example, researches were made to find a number of other poisons which were supposed to evoke a specific response from the central nervous system. The theory generally current at the time (Kraepelin also taught this) was that every poison would give evidence of a *specific elective* action on the brain, resulting in a characteristic psychotic syndrome. It was Bonhoeffer who in Germany first attacked this teaching of specific action. In collaboration with others he evolved the theory of exogenous reaction types or predilection types. In opposition to the specificity theory of Kraepelin, there arose the theory that there lies rooted in each individual constitution its own way of reacting to a noxious substance. It is not the poison which is the prime factor in determining the type of the psychic catastrophe, but the subject's constitutional predisposition to a symptomatic psychosis.

When we study the action of any particular poison on the human system two questions therefore always arise : *Firstly*, what elective action has this poison, which psychic or bodily systems are specially influenced by it, and, *secondly*, what form of constitutional reaction do we find brought about by the actions it has.

A study of the action of a poison sometimes gives us an answer to the one

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question, sometimes to the other. Sometimes our attention is entirely directed towards the poison, and we get a glimpse of a certain localized action produced by it; then, again, that same exogenous poison is to us nothing more than the means by which we discover numerous reactions inherent in the subject, the analysis of the splitting-up and destruction of the personality being the chief centre of interest. This kind of study has, then, besides its practical therapeutic and toxicological value, also a general psycho-pathological one.

Our psychic experiences take place in different strata of our psychic being. It is the task of psycho-pathology to learn to understand its structure. Obviously psychic reduction-phenomena are a most important source of information in these matters.

As the action of poisons results in the putting out of commission of certain of these hypothetical layers in the structure of our psychic selves, a knowledge of their action is useful to us in our efforts to unveil the mystery of this psychic structure.

Poisons, then, besides showing elective action on certain somatic and psychic systems, also act analytically on our psychic structure so as to lay bare certain previously hidden, primitive psychic elements. We shall see in the course of our study that it is not only intoxication which produces this result, but that abstention or disintoxication may produce it too.

Some Pharmacological Data.

The first barbital to be used as a narcotic was veronal. Numerous barbituric acid derivatives have since been made by varying the alkyl groups. It has been supposed that by lengthening the chain of alkyl groups the toxicity may be decreased, and a change brought about in the matter of absorption and excretion. The clinical action of barbituric acid cannot yet be reported on with exactness. Pharmacological research has dealt chiefly with hypnotic effect, diffusion and excretion in animals; clinical publications generally record a few cases only. Considering how very much sensitiveness to the above narcotics varies in different persons, the arranging of these facts will prove difficult. The constant increase in the number of chemical combinations produced by small changes in the molecule does not help to promote an exact knowledge of these drugs.

In this study, therefore, the action of these barbitals is taken for the most part as that of *one large group*. The mistakes involved in this or in the study of special secondary phenomena are not serious. The different barbitals have probably an elective action on the different subcortical centres. Many clinical workers will agree that this difference of action also exists clinically. Luminal (phenyl-ethyl-barbital), for instance, shows a typical action in cases of epilepsy, but produces in addition anomalous emotional states; if we replace the ethyl group in this drug by methyl, we get rutonal, which is said to be less

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toxic and to produce no emotional disturbances, but has a greater action on the peripheral blood-vessels (vaso-motor centre ?) and produces rashes.

Administration.—Barbitals may be administered in a number of ways.

By the introduction of "somnifen", injection technique was helped forward; barbitals were combined with a weak base, diethylamine, which increased their solubility greatly; the preparation itself actually consists of a solution of this barbital salt in a glycerin-alcohol-water mixture.

When somnifen is injected intravenously the danger of thrombosis is not an imaginary one, though I have not seen it once in more than 100 injections. In an emergency, however, as, for instance, a *status epilepticus* to which one wishes to put a speedy end, an intravenous injection is still the approved method. The intravenous injection is the ideal one therapeutically when one wants to induce immediate sleep. When the injection is given slowly, the patient falls asleep while this is being done. Subcutaneous injections give rise to infiltrations and abscesses. Injections can safely be given intramuscularly.

Absorption.—Little is known about the absorption of the different barbitals. The action of veronal taken by the mouth is only apparent after a half hour, sometimes more. Numal (allyl-isopropyl-barbital) appears to be absorbed more quickly and to have a wider field of action. It may often be observed clinically that in treating *status epilepticus* or *status paralyticus* one has to wait 15 or 30 minutes after an intra-muscular somnifen injection, while with the intravenous the patient falls asleep during the giving of the injection.

In the case of a patient who is in *status epilepticus* and is unconscious, the convulsions are relieved almost immediately the intravenous injection is started, and the patient begins to react when spoken to; he then falls into a deep sleep. Thus the hypothetical convulsion-centre, or at least the centre from or through which certain stimuli are transmitted during the epileptic attack, is brought under the influence of the sedative before the centre that regulates sleep.

Diffusion.—The problem of the diffusion of barbitals through our organism has been studied experimentally as well as clinically. I hope to return to this question in the section on localization of barbituric acid action.

Elimination.—Barbitals are eliminated slowly and have, therefore, a cumulative effect. We shall see later that this fact must be accepted on clinical evidence alone.

A very sensitive method has been devised by Zwikker by which the different barbitals in the body-fluids, blood and excretory fluids may be determined.

Elimination tests made on animals have proved that the proportion excreted differs in different sedatives in the barbital series. Numal, for instance, is characterized by the fact that it has very little post-hypnotic effect, and that, further, very little of the quantum taken in is excreted. This points to rapid destruction in the body and also to the retention of hypothetical products.

In diseases involving fever less barbital is eliminated. Even small doses of barbital inhibit diuresis.

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In cases of severe intoxication, anuria and other complications will have to be combated. Small doses produce a diuresis-inhibiting effect for a few hours, which is welcome. In some cases of insomnia, the patients are awakened by the urge to urinate, after which they cannot get to sleep again. In such cases a small dose of barbital performs a double action.

The Use of Barbitals in Psychiatry.

The different barbitals are much used in psychiatry as soporifics, anti-convulsants and therapeutic specifics in cases of certain psychoses.

Very little success can be claimed in cases of psychic excitement in psychopathic patients with average doses. Large doses—one reads of a dosage of 8 c.c. somnifen given intravenously daily (= 1·6 gr. barbital)—cannot be considered free from danger. Of course, barbitals are a favourite remedy in cases of insomnia accompanying psychotic states. Because their point of attack is different, they supply an agreeable alternative to the cortical hypnotics and a means of avoiding the formation of habit. But even with small quantities care must be exercised, as one is often dealing with very peculiar personalities.

I once observed the case of a woman suffering from reactive depression (she was of an asthenic build), whose treatment began with a dose of 30 drops of dial solution. Her reaction to this was a prolonged sleep, a rise in temperature, and a rash, with a pulse which could hardly be felt. Next morning she was still ataxic. During the rest of her treatment she reacted favourably to trional.

Spasmolytic action.—Small doses of barbituric compounds have a spasmolytic quality. In medical treatment these are much used, especially in cases of certain forms of hypertension. They are also used in psychiatry, especially in the treatment of depressive states, in which the old opium therapy is then combined with a small dose of barbital. The general impression is that success is achieved chiefly in cases of senile depression. As a result, small doses of barbital have come to be used with great success in cases of excitable patients suffering from cerebral arterio-sclerosis, and are often combined with bromide and iodide.

Anti-convulsant action.—The anti-convulsant action of luminal (phenyl-ethyl-barbituric acid) and rutonal (methyl-ethyl-barbituric acid) is well known. The treatment can, however, only be broken off at the risk of inducing *status epilepticus.*

Rutonal produces different secondary phenomena to luminal—morbilliform skin eruptions, sometimes pain in the extremities, etc.

The general opinion is that these barbitals act in the various forms of epilepsy as a symptomatic sedative with a specific action on the epileptic attack; in various other psychoses, however, the whole emphasis is laid on this symptomatic aspect. It is one of the aims of the present essay to

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introduce a different idea. The study of the prolonged narcosis treatment should lead to the conclusion that we have here a more specific action on the psychotic process.

Prolonged narcosis.—We are dealing here, then, with the treatment of psychoses by means of large doses of barbital, given for several days, sometimes weeks.

Kläsi was able to record great success in his very first experiments. His treatment lasted about seven days, large quantities of somnifen were administered daily to the amount of 8 c.c., and 23 excitable schizophrenia patients were subjected to it. Of the 23 patients he was able to discharge 8 after a week, and 8 others had greatly improved.

It is impossible even to mention all the cases recorded, but one gets the impression in reading his descriptions that something happens to these psychotic patients after this heavy somnifen intoxication, something serious, a process which causes the psychosis to yield for a shorter or longer period, but at the same time a process which we cannot control. Kläsi reports three cases which were fatal.

We quote here a few of his successful cases :

1. A woman, suffering from catatonia with manic-depressive symptoms, has usually to be isolated or put in a permanent bath for 6–8 weeks during her manic period, after which she is always permitted to go home on leave. She is now given a 5 days' treatment at the beginning of her manic phase, and on the eighth day she is able to go home. The next phase is also reduced by the treatment to one-fifth of its usual duration.

2. One of the most dangerous catatonic patients, who is nursed in the padded room, is given three courses of treatment, which are repeated every time she threatens to relapse. After the third treatment she is sent home cured. Nine months later, no relapse.

On reading these early accounts we see that cures have been effected in cases where the patient did not sleep, and also that the psycho-therapeutic influence cannot be very great during the intense intoxication.

The last case I wish to mention is one reported by my colleague, Dr. Schrijver, who has made a special study of somatic phenomena noted during intense barbituric acid intoxication. This particular case is especially remarkable, because it is one in which a totally different kind of psychosis than that which is generally considered susceptible of cure was here treated with complete success, namely, dementia paranoides—a diagnosis thoroughly substantiated by the course of events recorded.

A man, æt. 38, has for years suffered from bizarre delusions. He sees pursuers on all sides. He feels that he is being made the object of scientific study by some powerful body. He is restless, impulsive and aggressive. Everyone knows his thoughts. He hears voices and complains of being "tuned". He calls himself God's messenger. He has sexual and homosexual persecutory ideas.

From February 17, 1930, until March 8, 1930, he is given a course of treatment with somnifen. His sleep is variable. During the treatment the psychotic

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symptoms persist; five days after the end of the treatment the patient is less restless, but his psychic condition is unchanged. Seven days later he is suddenly normal. He regards his experience of the preceding months as an illness. On the eighth day he has a typical epileptic attack in the morning and another in the evening, after which he is somewhat stupefied. The following few days he still remains in good condition, with no return of the attacks. On April 4, 1930, he is discharged. Six months afterwards he is still well.

From these clinical data concerning the use of barbitals in psychiatry an important therapeutic problem arises. What does this intense barbituric acid intoxication really do? It is certain that much interesting information can be obtained from a study of these cures. In determining the dosage we often approach very near the lethal dose—a degree of intoxication which is generally indicated by the hopelessness of the case. Before marshalling the clinical data, we shall first try to outline the remaining literature and reported successes.

Technique and Statistics of Prolonged Narcosis.

Basing his opinion on the summary of results obtained, Müller finds himself dissatisfied with somnifen, although he is convinced of the favourable effects obtained by the treatment. He wishes, however, that a less dangerous method of administration could be used. The only comment we can make on Müller's remarks is that the data collected by him represent the work of beginners and include their mistakes. Making use of the experience they put at his disposal he might have been able to build further along the same line, but he transferred his interest to another remedy.

Two years later he published his experience in treating psychoses with dial liquidum. He gave 33 treatments. He made use of his earlier experience, with the result that he had no accidents on this occasion. In his previous somnifen period he had 2 deaths out of 22 treatments; now he had none.

He warns emphatically against any attempt to produce uninterrupted sleep. This is dangerous, as the breathing is affected unfavourably. A lowering of the blood-pressure of about 20 mm. Hg constantly occurs; hence the danger that collapse may follow. His success was most striking in connection with mania; of 20 treatments only 3 failed. Dial produces ataxia more quickly than somnifen, and less sleep. The success of the treatment is not dependent on sleep and generally shows itself after the treatment is ended.

In the great majority of cases during the whole course the excitement remained undiminished, and continued even after the final discontinuance of the somnolence; then after two or three days it began to diminish, and in the course of an hour or two gave place to a sudden change of phase.

When we come to deal with the theory of all this we shall have to deal with Müller's important explanations.

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The widest experience with somnifen treatment has been obtained at the Provincial Hospital near Santpoort. The following have successively published reports: Stuurman, Gans, Dozy, Bramson, Beyerman and the present writer.

Dozy published the collected data regarding the first 146 cases, among which were 3 fatal ones. The experience gained by Stuurman and Dozy was used as the basis for further work. This consisted chiefly in the conviction that it was important to exercise the greatest possible care during the first three days, and it was better to give drops than injections. It was important to investigate whether, because of some physical defect, there might not be a warning indication against the treatment. It was necessary to beware of times when influenza was prevalent.

In my publication of 1929 I was already able to report 500 cases from Santpoort Hospital; among the last 350 no mortality occurred.

Regarding a series of 179 courses of treatment administered to 175 patients during the years 1927 and 1928, I was able to report as follows:

26 patients considerably improved, with lasting and complete success; all circular psychoses, except for one confusional case.

15 considerably improved, lasting but not complete success; among these 3 schizophrenic patients.

57 favourably influenced.

70 showing no result; all kinds of psychoses, but chiefly schizophrenia.

11 cases that had to be interrupted.

We may therefore claim 20% as real successes, that is to say, when the treatment was so carefully given that no risk whatever was run.

If now we glance critically through the literature on the subject and ask what data are to be found there that will be useful to us before beginning to administer a barbital treatment, we find the following:

(1) Intoxication by barbitals, prolonged for some time, produces strikingly successful results, which are directly connected with the action of these drugs.

(2) It is not known which sedatives are best. Each worker prefers the one to which he is accustomed.

(3) Nor is it known to what psychotic states this treatment is best applied. Success has been recorded with cyclic psychoses as well as with cases belonging to the schizophrenia group. Numerically speaking, the greatest success has been had with manic-depressive psychosis.

(4) Even chronic cases have been affected, although it is with the early ones that success is most easily achieved.

(5) Success comes unexpectedly and cannot be foretold.

(6) There is nothing to indicate when the treatment should be begun or when it should be stopped. We do not know, for instance, which phase of the psychosis is the most suitable for treatment.

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(7) The length of a course of treatment varies from eight days to eight weeks.

(8) The great dangers which threaten are collapse, high fever and anuria.

(9) When success is achieved, this usually happens *after* the course is ended and is independent of sleep.

(10) No well-defined contra-indication is known. Many have been mentioned, but these have generally been suggested by the feeling of the moment, or by the unfortunate ending of a treatment due to some complicating disease.

(11) The more careful one gets, the less striking are one's results. The dosage of 8–12 c.c. somnifen per day has been reduced in the course of time to an average of 2–4 c.c. somnifen per day. Hence the successful figures reported by Kläsi—16 successes after 23 treatments—have not been reported.

The Clinical Aspects of Barbital Intoxication.

The heart.—The most severe symptom of barbital intoxication is collapse.

The danger to the heart is greatest at the beginning of the treatment, because of the sudden alteration in the vegetative system, on which barbitals have a specific action. In cases where the heart is slightly affected, but compensation is good, a carefully administered treatment may be undertaken.

The kidneys.—A decrease in the amount of urine passed is also a common occurrence, particularly at the beginning of the treatment.

During the last two years I have discontinued catheterizing entirely, as I regard this measure as distinctly dangerous. If percussion indicates a full bladder, it is only necessary to await events patiently; experience shows that after from 24 to 36 hours the bladder empties itself spontaneously.

If the bladder is not full, this indicates suppression, in which case the dosage of the sedative must be decreased, so as to promote diuresis.

Since the adoption of preventive measures, we hardly ever have a case of anuria. It is an established fact that at the beginning of the treatment the amount of urine decreases, later it returns to normal, and later still shows a a temporary increase.

The lungs.—Wherever there is a somnolent condition, the ventilation of the lungs decreases and the danger of hypostasis increases. In delirium tremens it is said that the danger of pneumonia is increased by treatment with somnifen. Inhalation pneumonia has also been reported. Patients should be made to eat sitting up during the treatment, as this promotes ventilation of the lungs as well as helping to prevent inhalation of food.

The skin.—Skin eruptions have been previously referred to in this study, and will again be mentioned.

Transitory œdema, *e.g.*, of the face, has repeatedly been observed.

Body temperature.—The theory generally accepted at present is that

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barbitals have an intracerebral toxic action to which the variations in temperature must be ascribed.

In order to define the action on the intracerebral heat-regulating centre more accurately, Kraus and the author made a systematic study of temperature charts. After studying more than 50 cases from this point of view, it is safe to say that somnifen treatment affects the temperature curve. The rule in these matters is, however, different from what is reported in the literature. It is not rises in temperature or violent variations that attract our notice, but the opposite, namely, that in most cases there is an equilibration of temperature. We cannot speak here of a purely antipyretic action; the temperature level is very little affected; it is sometimes lower, sometimes slightly higher, but one notices quite definitely a decrease in the daily variation.

If we take note of the variation in temperature in connection with our barbital dosage (and the dosage varies with the individual case, of course, account being taken of the pulse, temperature, amount of sleep, urination and general condition), we find that very small doses have no effect at all on temperature, that an average dose reduces the maximum variation somewhat, so that the curve is comparatively flat, but that larger doses produce very great variation, the temperature rising and falling violently. It is even possible to control the temperature by the dosage. If less of the drug is given or none at all, immediately a "restlessness" shows in the charts—not much, but enough to be noticeable. If too much is given, another kind of "restlessness" is observed—fever alternating with subnormal temperature, both accompanied by other toxic symptoms.

For several years past an effort has been made to keep the temperature level, with as small a daily variation as possible.

The barbital dosage can be so regulated in each treatment that the variation shown is less than before. If the dosage used began to produce greater variation, if the crest of the wave rose above the usual level (this does not necessarily mean fever), this was immediately taken as a danger-signal, and as a precautionary measure the amount of somnifen administered was reduced. To keep the chart from showing any great fluctuations was found to be a safeguard against toxic effects.

Taking the temperature regularly brings several peculiar points to our notice:

(1) If it is only about the third day that the curve shows the influence of the somnifen or other barbital, then we can make use of the first three days to note on our table the normal course of the temperature.

(2) Somnifen does not show a strictly antipyretic action; sometimes we observe a rise, sometimes a fall of the average temperature.

(3) Changes in the temperature curve are not dependent on how restful the condition of the patient is. During a condition of manic exaltation, which

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was more intense than ever during the period noted on the chart, the temperature came down to a lower level and showed less fluctuation. After the treatment comes a sudden change. The patient is perfectly well psychically and goes home cured, while the temperature-level rises and the maximum daily variation increases.

(4) Intense fluctuation of temperature does not occur only during the treatment; sudden changes also occur *after* the treatment is over, fever occurring in 5 cases out of 50 even after the fourteenth day (disintoxication fever).

(5) Subnormal temperature is as common a phenomenon as fever. One gets the impression that catatonia and confusional states are predisposed to this. Influenza also produces this effect.

Somnifen and other barbitals affect the regulation of the heat of the body, even after the treatment is finished, when it is no longer possible to demonstrate chemically any excretion of the drug. The most likely explanation of this seems, as we will see, a central action of the barbital or of one of its disintegration products.

Neurological symptoms.—If internal symptoms are to be largely ascribed to changes brought about in the vago-sympathetic system, probably due to the action of the barbitals employed on the mid-brain, a study of the neurological symptoms points to the same conclusion, and even more emphatically.

We see bulbar symptoms during the treatment, such as difficulty in swallowing, thickness of speech, loss of coughing and vomiting reflexes, ataxia, disturbances in co-ordination, bradycardia. Time has added the following further symptoms to the list:

Cerebral vomiting (patients vomit suddenly though retaining their appetite; we combat this symptom with atropine, or with ephetonine), dermographia, profuse perspiration, ptyalism, nystagmus, epileptiform attacks, co-ordination disturbances with premonitory symptoms, tremors (tremor of the underlip), Babinski's sign, musculo-spiral paralysis (pressure neuritis ?), etc.

These neurological symptoms may be observed when any of the barbitals are used, and even with very small doses.

Nystagmus is regarded as the most common sign of slight barbital poisoning. Nystagmus, oliguria, vomiting and decubitus are the cardinal symptoms of veronal poisoning.

Hiccup.—I observed a case in which the patient hiccuped constantly from about the eighth day of his somnifen treatment to the end. He was suffering from a manic-depressive psychosis, and was given only very moderate doses of somnifen. When the treatment was stopped the hiccup ceased.

Pseudo-diseases.—That the many divergent neurological symptoms included under this head may present a confusing complex to anyone not familiar with their cause, is quite obvious. Barbital poisonings are described

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as pseudo-paralysis, pseudo-sclerosis and pseudo-syringomyelia ; there are also cases of post-barbital Parkinsonianism.

Sudden deaths.—Sudden deaths during the treatment seriously impress the minds of those physicians who are considering whether or not to include this barbital therapy in their clinics. The percentage of fatal cases, given by Müller as 5, makes it very necessary to try and discover means which will safeguard us against the recurrence of such cases. Müller himself considered the use of another narcotic—dial—to be such a safeguard ; but it is also possible to arrange the technique of administering the drug so as to prevent various secondary symptoms from arising and thereby avoid the danger of death by poisoning. In a later section I describe the use of another remedy of this kind which we may regard as less poisonous. In this connection it will be interesting, however, to recall one or two old cases of death by barbital intoxication, now that added experience enables us to interpret various symptoms differently.

I will mention two cases of death after fairly small doses of barbital.

Malachowski's case (*cf.* Müller) : During the first part of a somnifen cure an 18-year-old girl was given 4 c.c. somnifen in order to produce sleep. Two hours later she collapsed and died.

Others have taught us to be careful at the beginning of a cure, to begin gradually with drop doses, so as to be able to detect any possible personal idiosyncrasy. If we begin each treatment by putting the patient through a sort of toxicological test without bothering about inducing sleep, cases of the above sort will not occur again.

The other fatal case I mention here is one that occurred some years ago in the hospital before I had much general experience at my disposal.

Miss J. L— is 27 years old, and is taken to the hospital with reactive manic-depressive psychosis. Suicide has occurred in her family. Three years previously she had kidney and bladder trouble. She is of an asthenic build.

During the first few days she is given small doses of somnifen in order to make her sleep, and these make her rather dull. After a few days, work therapy and suggestion are tried, and this does her good. She works in the garden.

In February she has influenza. After that she grows melancholy again.

At the end of March a course of somnifen is tried. The first day she is given three times 30 drops of somnifen, the next day two doses of 2 c.c. somnifen intramuscularly.

During the treatment she is very dull. Pulse and temperature are good. Daily excursion 0·7 of a degree (1·2° F.). On the seventh day the excursion increases. On the seventh, eighth and ninth days temperature subnormal. Albuminuria does not occur. The next night, during an effort made to urinate, the patient collapses and soon after dies.

Post-mortem reveals only a weak heart. No examination of the brain was made.

It is useful to analyse a case of this sort in order to learn from the mistakes of the past. We now know of three indications which should warn us to stop treatment in such cases or to decrease the barbital dose :

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(1) This patient proved on admission to be very sensitive to somnifen. Asthenic people are especially so.

(2) After or during influenza we ought to be especially careful.

(3) Not only fever, but also subnormal temperature, is a toxic symptom, and is nowadays regarded as a serious danger-signal.

This summary account of the clinical features of barbital intoxication was necessary, for only by a knowledge of these dangerous symptoms are we able to learn to avoid their occurrence.

The therapy of barbital poisoning.—It may be useful to mention here the therapy to be applied in cases of acute danger during prolonged narcosis treatment.

In cases where there has been a gradually cumulative toxic action, stomach-washing or laxatives will be of little use. These are useful, however, in acute cases, as for instance where there has been an attempt at suicide by means of barbitals.

It must not be forgotten that to suddenly stop giving barbitals may produce catastrophic results too, and that a sudden abstention brings about dangers of its own. Of cardiac tonics we would give preference to those which promote diuresis, such as digitalis, and especially caffeine and coramine. In this connection the following emergency measures are advised: lumbar puncture, caffeine and coramine injections and a subcutaneous infusion of isotonic glucose solution.

The Paradoxical and Secondary Actions in Encephalopathies.

Although we have so far discussed barbitals only as narcotics, all that has been given up to this point in this study must have struck us as being paradoxical by-products of this sleep-inducing action. If we definitely search for these secondary and unexpected elements, we shall find still more telling phenomena to illustrate them. First, then, we must consider—

Increased excitement.—A psychopathic patient cannot be put to sleep if he does not wish to sleep. Such patients grow more excited than before while in a state of barbital intoxication. Like maniacal alcoholics, they begin to sing and shout, their speech becomes thick and often they become furious; sometimes again confused and delirious. It is more especially those persons who easily develop a craving for the drug who react to the narcotic with these maniacal symptoms. Every physician connected with an institution knows these psychopaths, who always ask for veronal or somnifen, and who are particularly fond of the prolonged narcotic treatment, and far from avoiding it, produce extra psychotic symptoms in order to get it.

That the action of the drug is mania-stimulating is proved by the following clinical experiment:

A woman, R. S—, is a hysterical psychopath suffering from fits of fear, dream

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conditions and, now and then, unbridled aggressive symptoms. If she is given a somnifen injection during her restless, anxious period, she becomes like a fury, delirious, thick of speech, beating about and kicking. Injection with sterile water often produces sleep without excitement, although the patient complains next day of feeling dull as a result.

The following case shows that increased excitement resulting from a barbital poisoning may lead to strange mistakes in diagnosis.

A patient is sent from the clinic to the mental hospital, the diagnosis being mania in tabes, with possibly a commencing general paralysis.

The patient arrives at the institution with a history pointing to tabes and, further, with peculiar slight rises in temperature of the kind observed in progressive paralysis, with dysarthria, aberrations of perception and memory, and an unusually euphoric exaltation. It seems quite safe to diagnose a rapidly increasing dementia, and malarial treatment is discussed with the patient's relations. After a few days' rest these symptoms disappear; there remains only the euphoric exaltation in an intelligent person. The solution of the problem came later with the information that the patient had just lately had a course of somnifen treatment, in which the dosage had been very high. When under the influence of this poisoning he showed the above-mentioned symptoms together with an increased restlessness, which must have been the cause of the mistaken diagnosis.

Paradoxical sleep-inducing action.—This expression denotes the phenomenon in which sleepiness is cured by a narcotic, or a sedative that acts like a tonic.

One author tells of a person suffering from narcolepsy, who reports definitely that he sleeps more restfully at night after caffeine, whereas veronal tends to disturb his sleep.

The ætiology of narcolepsy is still little understood, although we suspect a connection between it and encephalitis lethargica. I myself observed the same perverse action in two cases in which there was no trace of encephalitis.

To another group of somnolence types belongs the reactive somnolence found in psychopathic persons in times of physical uneasiness. Sleep in such cases is a refuge from reality, a passive reaction to the anxiety of the moment. Patients complain of being unusually sleepy; their night's rest is not disturbed, but in the morning they do not feel rested and during the day they show a tendency to fall asleep. Besides psychotherapy, a sleeping-draught which produces a deep sleep without leaving any injurious after-effects will prove helpful in such peculiar, distractive states, which involve serious but unconscious worrying, as it were. A remedy of the sort needed is, for instance, allonal, in which a very small dose of numal is potentialized by means of a small dose of pyramidon. I myself have noted a couple of such cases during the present depression, in which the sleeping-draught and the resultant *deep* sleep caused the drowsiness to disappear.

In encephalitis lethargica a paradoxical action of narcotics, as well as of other drugs, has often been noted.

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The following case-history shows how difficult and complicated all this is:

Miss J. H— has for years been known in our asylum as a patient suffering from dementia præcox. Her brother is also being nursed for the same disease.

She was taken into the hospital in January, 1913, at the age of 25. Until she was 11 years old she was well; then she was ill for ten days—according to the family's report she had fever and St. Vitus's dance. After this her mental and physical development was normal, however.

A year before her psychosis suddenly came upon her she had a painful attack of otitis with otorrhœa.

The psychosis began rather suddenly with religious visions and delusions of reference. She is full of self-accusations, but also accuses others of immoral dealings with her.

In the history of her case she is described as now and then a dazed negativistic patient, and then again an excitable catatonic given to grimaces and impulsive disturbing conduct. These phases often alternate with one another. In 1929 she is diagnosed as suffering from catatonia, with occasional fits of collecting mania, craving for delicacies, and catalepsy. Because of this rather peculiar combination of symptoms, another complete neurological examination is made, but no aberrations are found.

In 1930 her restlessness makes it necessary to treat her with sedatives now and then. But barbitals induce an angry aggressive condition—their action is paradoxical. Paraldehyde works promptly. One never has contact with the patient. Pathological reflexes are not found during 1930.

In March, 1931, during the influenza epidemic she falls ill with an initial angina and fever. During the next few days she gets duller and has difficulty with breathing and swallowing. Clinically we find further: narrow, poorly reacting pupils, positive corneal reflexes, no eye-muscle paresis; general heightening of the tone of the muscles; myokymia; Chvostek's sign positive.

The reflexes are increased, abdominal reflexes lost; Babinski's sign obtained on both sides, clonus of the left foot. Patient shows twitches of a choreo-athetotic character in hands and legs, mouth and eyes. Percentage of sugar was not determined.

After that the patient gets gradually better, temperature becomes normal.

At times she has spontaneous motor and athetotic twitches, which are reminiscent of "choreic attacks". It is also remarkable that contact with her family, which had not existed for years, became more or less re-established after this illness. She now exchanges a few words with them. In May she gets worse. There are difficulties in connection with the assimilation of food. She has no fever, but shows distinct symptoms of meningeal irritation. Lumbar fluid shows no deviations from the normal, apart from a perhaps heightened pressure. She becomes feverish, a herpes zoster develops on both hips, and the skin soon gives way. She now has short attacks with tonic and clonic convulsions; she has periods of gnashing her teeth, of swallowing and hiccup reflexes, strabismus divergens. The abnormal reflexes are the same as they were in March.

She dies in the middle of June. The family could unfortunately allow us only a *post-mortem* of the brain.

The brain showed no atrophy, and as a result of histological examination my colleague, Dr. Frets, described the slight abnormalities he found as follows: Nothing peculiar noted in the cortical parts. In the Nissl picture in different parts of the basal ganglia we find decomposition-products round the vessels, slight infiltrations, glia-accumulations round pale ganglion-cells. In the substantia nigra the pigment-cells are unchanged, but decomposition-products are profuse and glia-nuclei increased.

The examination mentioned here, which is only a beginning, and in connection with which, of course, many more cases will have to be examined, is

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described because it stimulates fresh questioning. Will it become possible to differentiate between different kinds of catatonia, classified according to their reaction to barbitals ?

Cravings and desires during barbital intoxication.—The report just made of the paradoxical action of barbitals in certain cases has naturally diverted our attention from the peculiar psychological phenomenon of craving.

These phenomena of craving (*e.g.*, for drink or sweets) are so complicated that it is impossible to speak of a simple psychic symptom. An effort has been made to connect these primitive expressions with the function of one of the oldest parts of the cerebrum. I have noted these peculiar craving-symptoms arising spontaneously during convalescence from influenza, in a case of encephalitis (during the transition stage from acute to chronic), and during barbital intoxication. Craving is connected with the regulation of our deepest instinctive functions and passions. Every relaxation of restraint resulting from injury to the higher brain centres will lead to an increase in these primitive manifestations. Such craving is put a stop to temporarily by normal satisfaction thereof, although a certain periodicity is to be observed. But if the centres which regulate it or are connected with it are no longer intact, as happens in cases of pathological craving for sleep, then the craving is constant or paradoxical, there is no satisfying it, it grows worse and leads to behaviour indicacating disease. Somnifen and other barbitals repeatedly produce ill-balanced manifestations of the most primitive functions connected with self-preservation.

This has often been noticed after prolonged barbital cures. We often find patients who refuse food during the treatment only. Many become more than usually erotic during the treatment. The schizophrenics in particular are often bad-tempered and negativistic during that time. On the whole it may be said that during the cure many primitive reactions are unloosed, patients becoming puerile, demonstrative and clownish.

Although we cannot interpret these primitive cravings and their variation exactly, yet they are of great value to psycho-pathology.

Barbital addiction.—It is also possible for barbituric acid intoxication to awaken a steady craving for this drug. Although this is not the place to go deeply into the details of the problems connected with toxicomania, it is quite natural to try to find a link with the general phenomena of desire and craving as described above. A constitutional predilection is generally accepted as the cause of real toxicomania ; the desire for intoxication is said to be most common among cyclothymics, while the chronic use of the poison produces a " schization " of the personality. The general opinion is, that habitual use of toxic substances produces a change in the vegetative-hormonal system, resulting, according to David, in the disturbance of the equilibrium of the vago-sympathetic system, which is afterwards re-established on a new level. Abstention phenomena may then be explained by the disturbing of this new and less stable equilibrium.

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Barbital derivatives have also a tendency to produce symptoms of toxicomanic craving, and by these, too, the character is affected.

Somnifen craving is described by many authors. I have myself observed it once in the case of a depressive psychopath, who on one occasion took an overdose in order to demonstrate her suicidal tendencies, and as a result was brought to the asylum. She tried by all manner of devices, in a way only psychopaths can, to get hold of narcotics from the staff.

Several cases of *dialism* have been observed in which visual and auditory hallucinations occurred. Strange to say, several of these patients evinced a disgust for food in the morning after a profound sleep.

Veronalism is often mentioned in the literature as a symptom of psychopathic inferiority. We shall return to this subject again when we discuss the treatment of abstinence symptoms.

Hallucinations.—This symptom is mentioned separately for the sake of completeness. It is possible for chronic barbital intoxication to produce hallucinations. Not only during the intoxication but also during the abstention stage can psycho-pathological phenomena of this kind be observed. We have already mentioned this in cases of addiction. Long-continued luminal medication in epileptics sometimes has results of this kind. Kaiser reports cases of previously clear-headed epileptics who developed hallucinations and ideas of reference together with exanthema and œdema. In three cases these symptoms have lasted more than two years and seem incurable.

Epilepsy.—In cases of epilepsy, where there is presumably a heightened tendency to the convulsive response (" Krampfbereitschaft "), together with a hypothetical exciting cause, luminal cuts off the motor discharge and prevents the epileptic attack. This blocking does not, however, put a stop to the working of the hypothetical cause (*e.g.*, auto-intoxication) ; instead of the major fits, we sometimes note " *petit mal* " or other equivalent symptoms making their appearance. We often observe serious changes in character in mental hospital epileptics after the use of luminal ; they get irritable, and pass more readily into a state of furor. The theory regarding the working of the process is this: the sedative obstructs the stimulus coming from a hypothetical centre (fit-centre) to a greater degree in the motor than the psychic sphere. This explanation may make many things clear to us, even though we do not feel obliged to take the idea of a centre too seriously. For if there is a normal, though latent, " Krampfbereitschaft ", we can imagine how any sudden abstention from remedies which exercise restraint upon this hypothetical centre would allow the attack to discharge itself.

Many narcotics and sedatives demonstrate this rule, that sudden abstention after habitual use brings with it motor and convulsive discharges. This form of symptomatic epilepsy is an abstention-phenomenon. Pohlisch describes epileptiform attacks during abstention from paraldehyde, after luminalism and after veronalism. It is even described as taking place after chronic

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lead-poisoning. We find these convulsive reactions mentioned as occurring after many attempts at suicide with large doses of hypnotics, as, for instance, in a case where tonic and clonic convulsions developed after 8 gr. of veronal had been taken, followed by Chvostek's sign and pupils insensitive to light after the first intoxication symptoms had already disappeared.

An intensely hysterical patient, suffering from veronalism and undergoing a cure in the clinic, became first anxious and confused, and later died in *status epilepticus*.

A short barbital treatment may also induce these convulsive reactions during the disintoxication stage.

In the Provincial Hospital near Santpoort, where, at the end of 1929, more than 500 somnifen treatments had been given, five cases of epileptic reaction to somnifen were reported—three times in the case of one patient, each time after a course of treatment.

Here we see the first case (1925) :

Miss v. d. H—, æt. 30, suffers from schizophrenic psychosis, commencing during pregnancy.

She is autistic, negativistic, untidy and unusually apathetic. As far as could be discovered there was no instance of psychosis or catalepsy in her personal or family history.

In May, 1925, she is given a course of somnifen on account of her great restlessness, but without result. On June 12 she is given a longer course, the somnifen dosage being slowly increased, beginning with 55 drops twice per day, then two and finally three injections of 6 c.c. daily.

On June 26 her temperature rises to 39° C. (102° F.), and falls again when the somnifen is temporarily withheld. The treatment is cautiously continued the next day, and brought to an end on July 2. During the treatment the patient is very excitable and exalted.

Evening temperature of 38° C. (100° F.) is noted until July 6. Average time of sleep was six hours out of the twenty-four.

After the treatment the patient becomes calmer and a little more approachable. On July 5 she suddenly has two fits.

No neurological changes were found on examination just after the attack.

The attacks have not since been repeated even after succeeding treatments.

Catalepsy and catatonia.—Barbitals have a double connection with the cataleptic syndrome. On the one hand these compounds may induce catalepsy ; on the other an already existent cataleptic condition may be favourably influenced by small doses.

It is a well-known fact that in cases of serious intoxication motor disturbances resembling catatonia may be present, as also catalepsy, motor restlessness and so forth, together with pupil disturbances. A syndrome resembling catalepsy may also be produced experimentally in animals by poisoning with bulbocapnine.

Now and then somnifen treatment produces catalepsy as a secondary symptom. It is noteworthy that it is particularly the intravenous method which is apt to bring this about. The similar action of somnifen and bulbocapnine in such cases is ascribed by Buscaino and Giacomo to the presence in

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both drugs of an amine group. I have, however, seen the same effect produced by a barbital mixture containing no diethylamine.

If careful attention is paid to this phenomenon of catalepsy during barbital treatment, it is possible to succeed repeatedly in inducing it. I regard this personally as a warning to be moderate in dosage.

Three years ago I described such a case of catalepsy during, and as a result of, treatment.

The patient is depressed and anxious, and has many hypochondriacal delusions. She is not inhibited. She has a strongly suicidal tendency and has to be watched continually. When not watched she either hurts herself or is destructive.

Her reaction to somnifen treatment, which has repeatedly been tried, is always unusual. She is cautiously dosed, a beginning being usually made while she is in a rest-bath. At first her motor restlessness increases; she gets more restless and anxious than ever. Later she becomes cyanosed, and her temperature becomes subnormal. Her skin is then very pale, and it seems as if she might collapse at any moment. Her suicidal tendencies continue. Then again she takes on a theatrical attitude, with *arc de cercle*, and she mimics the rigidity of a corpse. She remains abnormally erotic. Repeatedly we are able to induce cataleptic symptoms in her (which she does not experience apart from the treatment).

Sometimes we find a cataleptic syndrome making its appearance also in cases of epilepsy during luminal treatment. I have not yet seen attention called to this fact in literature.

The clinical picture of catatonia is also often strangely modified by barbital treatment. One patient was admitted in a violently exalted condition, screaming and singing, hallucinated, cataleptic, allowing no psychic contact whatever. During treatment she became quiet and reacted adequately; the psycho-motor disturbance seemed to have disappeared and there was no longer any catalepsy. Only stereotyped remarks, slight autism and vague delusions suggest that we are dealing with a diseased personality. This patient kept well for a week after treatment, but very soon relapsed into her old condition.

Another patient suffering from catatonia, who has not uttered a word for years, and with whom all contact has long since been lost, begins to talk during the barbital intoxication. An effort has been made to make use of this phenomenon as a means whereby information might be gained regarding the delusional life of a person in a catatonic stupor, and many a time I have been able to make successful use of the treatment in this respect. Solomon and others use sodium amytal intravenous injections to put an end to the cataleptic stupor.

Abstention symptoms.—The phenomenon of epilepsy after protracted barbital intoxication is sufficient to make it necessary to consider this abstention or disintoxication stage from a clinical standpoint. The process does not end with the so-called prolonged narcosis. For after that is over the following clinical facts may be observed:

(1) A sudden change in the psychotic symptoms, which sometimes means cure.

(2) Epileptiform attacks.

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(3) Anomalous moods.

(4) After several days a temporarily repressed psychosis breaks through with renewed fury.

(5) Variations in the temperature curve sometimes occur, with fever on the seventh or eighth day. This phenomenon was noted especially in catatonia and confusional states.

In books on the action of alcohol, morphine, cocaine and the like, we repeatedly read about the very varying effects of abstention, when this is practised by patients who have been very seriously addicted.

Not only intoxication, but also disintoxication seriously affects the organism.

This is equally true as applied to barbital treatments. If symptoms of intoxication are observed during the cure, these symptoms should be treated and the intoxication decreased, and it should be remembered that a very sudden stopping of the treatment may, in the case of a person who is in a bad condition already, prove catastrophic.

It is obvious that in order to formulate a theory explaining the action of the narcosis treatment, it will be necessary to seek for the connection between these abstention symptoms and the sudden changes that take place in the psychosis several days after the treatment is ended.

Barbital Idiosyncrasy.

Individual susceptibility to hypnotics may be regarded as the result of a special systemic action of the different hypnotics affecting different psychic systems. "Basal" (brain-stem) hypnotics, for instance—and the barbitals belong to these—increase sensitiveness to suggestion.

The following case illustrates this selective working of narcotics in connection with variable tolerance.

Miss A. S— is taken to the hospital on account of presenile dementia and memory disturbances, alexia, aphasia, agraphia and depression. The divisional physician is undecided as to whether it is Pick's or Alzheimer's disease, but it is certain that there is a destructive process going on in the brain.

A remarkable feature of this case is that she hardly reacts at all to normal doses of paraldehyde or chloral (cortical remedies). Yet she needs a sedative during her screaming fits in her restless periods. Even small doses of somnifen (15 to 20 drops) exert a beneficent influence. This dose given three times a day already produces continuous narcosis and danger of over-dosing.

Cases of barbital idiosyncrasy are repeatedly recorded in the literature. The syndrome which may be taken as characteristic of this idiosyncrasy is fever, anuria, nystagmus, sometimes accompanied by erythema and increased excitability.

It is especially where large doses are given that the physician now and then comes across the idiosyncrasy, which increases the danger of beginning a cure suddenly. Müller reports a case of idiosyncrasy in respect to dial in

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one of his patients, which showed itself with each successive course of treatment.

Variable sensitiveness.—Variable sensitiveness to barbital is also mentioned casually in literature. Old people in particular become gradually more intolerant to veronal, and disturbances in the action of the pupils and reflexes occur more quickly.

It has been repeatedly pointed out in the literature on prolonged narcosis that there are certain times when narcotics are more than usually dangerous for the patient and produce toxic effects more quickly. Influenza epidemic periods are warned against as being such times. It is the general opinion that anuria, nystagmus and other intoxication phenomena make their appearance more rapidly at these times. It has been noticed repeatedly that the same dose given to the same patient will on one occasion induce alarming symptoms and on another occasion none.

A patient suffering from psychosis is given a course of somnifen in which 10 c.c. is used *per diem*. Some time afterwards he is obliged to have another course, in which intoxication symptoms show themselves after only 4 c.c. have been given.

Practical experience has taught us that patients suffering from any febrile disease (*e.g.*, pneumonia) react less favourably to veronal than others.

At the present stage of our knowledge of the subject it is difficult for us to prove what the relation is between infectious diseases and increased sensitiveness to barbitals. It is possible, however, to point out certain clinical analogies, as indicating a connection between influenza, for instance, and increased barbital susceptibility.

A few data on this point were furnished by the influenza epidemic at Maasoord in 1931. During this epidemic among psychotic persons, who therefore had a special cerebral predisposition, numerous little-known complications arose, such as otitis, nephritis, arthritis, strange ulcerations of the skin, gangrene, etc. During the convalescent period we noted symptoms indicating cerebral intoxication, not only in the different patients, but also in the nursing staff. The cause of these fortunately slight symptoms is still in doubt. French neurologists are inclined to assume the presence of a slight encephalopathy in these cases. The above is necessary by way of introduction to the report of the following case.

Miss v. d. H— is an asthenic young woman with delusions of reference and hallucinations. General physical, neurological and serological examination showed nothing abnormal. The blood-pressure is low.

She is given somnifen treatment. Even after a small dosage her reaction is abnormal. She develops fever with a scarlatiniform rash and cyanosis. The treatment is therefore interrupted.

Several months later, during the influenza epidemic, she suddenly develops a high temperature, angina, and again the scarlatiniform rash. Nothing abnormal is found in the urine. After two days the fever disappears. The skin peels almost

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immediately. Several weeks later the Rumpel-Leede symptom is still positive during the taking of blood-pressure.

The above phenomena point to a parallel working between the influenza toxin and the barbital intoxication. Compare also the following phenomenon. After influenza we noted in patients suffering from catatonia violent fluctuations of temperature, which fell very low; this subnormal temperature was also observed in psychically normal persons. During barbital disintoxication these violent fluctuations are seen particularly in catatonic patients. These considerations make it permissible to ask whether the influenza toxin and barbituric acid may not have the same point of attack in our systems. If so, the changed tolerance during influenza is partly explained. Anatomical proof will be difficult.

That, on the other hand, barbital intoxication also produces a changed susceptibility to influenza is shown by the following:

Miss N. N— is taken ill three days after her arrival at Maasoord with severe influenza, with high fever (104·4° F.), pains in the back, tachycardia, extra-systole. Antipyretic drugs produced rashes.

Her convalescence was prolonged. Fever continued, with profuse perspiration, nystagmus, dermographia, tremors of tongue and fingers, at times diarrhœa. General, physical, hæmatological and X-ray examinations do not reveal causal connections. This condition lasts for months. Finally it turns out that the patient was an addict, a "eucodalist" and "dialist", who had been weaned just before she came to Maasoord. The process of breaking the habit had already produced violent vegetative reactions. The influenza toxin did the same.

After small doses of luminal and atropine gradual improvement set in, but any unusual emotion still caused violent reactions.

It follows that, before administering a cure, it is necessary to inquire into the personal reaction of the patient. Kläsi's rule (also followed by Müller in his dial cures) of putting the patient to sleep directly by means of a generous dose is dangerous. Any patients we do not know may *be expected to show* unforeseen idiosyncrasies, and even in the case of a known patient, a totally different reaction may be looked for in each successive course of treatment.

When a cure is given involving large doses of barbital, the first three days should be used as a testing period, in which the personal reactions of the patient may be discovered. Such individual reaction should be most carefully watched for during influenza epidemics, in connection with other infectious diseases, and especially in connection with diseases in which the functions of the brain are affected.

Localization of Barbital Action.

In considering the localization of action of a drug we ask ourselves first what function is disturbed during the drug's action. The anatomical substratum we find later is not always analogous. To find a pathological-anatomical phenomenon after intoxication does not justify us in concluding that the main action of the drug takes place in that region, but only that

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the relation subsisting between sensitiveness to injury of the tissue on the one hand and the active drug on the other has been such as to produce a catastrophic result. At this point the pathological-anatomical find is a discovery after the event—after a serious intoxication. It is not impossible that the diffusion of the poison would be quite different if the degree of concentration were changed, and that in such a case the drug would produce results elsewhere. The action of alcohol, for instance, has already supplied clinical data suggesting this idea. In this connection there is a certain boundary line marking the stage where a reversible functional disturbance turns into a permanent, irreparable disturbance.

The various indications pointing to localization of barbital action are obtained *clinically, by physiological experiment and by pathological anatomy.*

Clinical classification.—We have already mentioned the clinical classification of narcotics into cortical and basal (brain-stem) remedies. Barbitals are considered to belong to the latter group. The whole section on the clinical aspect of barbital action points to this localization. I recall once more the numerous bulbar symptoms, ataxia, disturbances in co-ordination, fever, cerebral vomiting—a symptomatology which is also observed in disorders of the brain-stem.

I wish to call special attention here to anuria and difficulty in emptying the bladder, which symptoms many students ascribe to toxic irritation of the kidneys. These as yet unexplained symptoms are also found in cases of subcortical or ventricular tumour; if in the one case we may assume a central polyuria, we may with equal justice assume a central oliguria in the other.

Our literature compares the action of somnifen and somnifen sleep with the sleep of encephalitis lethargica (Kläsi and Müller). Both forms of sleep are equally easy to interrupt. It is quite natural that in this connection we should think of a localized action in Economo's hypothetical sleep-regulating centre.

Experimental physiological proofs.—The following may be counted among the experimental physiological proofs that barbitals act on the brain-stem:

E. and J. Keeser's experiments on animals:—These animals were given the iron and silver salts of luminal and dial, in order that the *post-mortem* study of possible precipitates of these narcotics might be facilitated. Such precipitates were found in the thalamus, to a lesser degree in the corpus striatum, but nowhere else.

Hoff and Kauders's experiments:—After experimental medinal poisoning of dogs, the following were noted: Elective injury of the nuclei of the medulla oblongata, of the olives and round the Sylvian aqueduct. This injury was marked by chromatolysis, tigrolysis and acute swelling.

Wiki showed by means of experiments with animals that dial is apt to affect the respiratory centre earlier than the heart centre. Respiration is affected first; seven times as much of the drug is needed in order to paralyse the heart.

Pick experiments on large decerebrate animals, producing thereby a heightened sensitivity to barbitals as regards hypnotic action. His view is that the point of attack for these narcotics lies in the brain-stem, near the thalamus, between the diencephalon and the mesencephalon, in contradistinction to that of the inhalation anæsthetics, which lies in the cortex.

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Gruber and Roberts found that in animals somnifen, dial and luminal produced a gradual dilatation of the cerebral vessels.

Epifanio performed autopsies on animals treated with sodium luminal. He found a considerable accumulation of fatty matter in the walls of the brain vessels, and a decrease of fat in the nerve tissue.

Anatomical findings in connection with human beings.—Hage (according to Pohlisch) reports 18 cases coming to autopsy after veronal poisoning, in which were found generally speaking, hyperæmia and œdema of the brain, small hyperæmias and hæmorrhages in the oblongata.

Spielmeyer and Weimann mention the following changes after veronal poisoning: General toxic phenomena, tigrolysis, etc., capillary hæmorrhages as in polio-encephalitis hæmorrhagica, purpura of the brain with ring-shaped hæmorrhages round the capillaries, especially in the mid-brain.

Oppenheim is of opinion that changes brought about by veronal intoxication are to be found especially in the inter-brain and mid-brain, the tuber cinereum and the regio subthalamica.

Van der Horst found the following changes in the case of a patient who died after she had taken 8 c.c. somnifen for four days: degenerative changes in the ganglion cells of the respiratory centre, in the vagus nuclei, the cerebellum, and the thalami; locally there were metachromatic degeneration products, which were absorbed by glia round the vessels.

Even this short account of anatomical aberrations shows that barbitals evince a great preferential tendency towards the subcortical parts of the brain, and hence we have clinical, physiological and anatomical proofs that the regions especially susceptible to barbitals are chiefly in the brain-stem.

The brain-stem, which varies so much in size with the individual, is a very important part of the brain toxicologically. In many cases of intoxication, pathological-anatomical examination shows the toxic stamp impressed there as it were. In this connection I might mention, for instance, chronic alcoholism, morphinism, lead poisoning, so-called salvarsan-encephalitis, carbon monoxide poisoning, anaphylactic shock, encephalitic influenza. Each poison chooses its own special field from among these vital parts of the brain. A more serious study of these regions, in connection with the intoxications mentioned, will supply a more definite answer to the questions already formulated, concerning the influence of various intoxications and infections on each other and to the kindred problem of idiosyncrasy.

New Optimal Mixtures.

What may we demand theoretically of a remedy to be used in treatments as here introduced? Taking into account the various complications which we try to avoid and considering the results we must insist on obtaining, namely, action on the somatic processes accompanying the psychosis, we must look for the following qualities in a remedy or mixture of remedies—qualities which of course partly overlap.

A theoretical mixture for use in the treatment here described should have the following properties: It should induce sleep readily, have slight toxicity, be easily soluble in tissue fluids (for injections), act selectively on the different

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brain nuclei; the different constituents must reinforce each other mutually; it should be antipyretic and diuretic; produce "non-specific" stimulating action, and not derange respiration or heart-action. It must also be compounded of substances the clinical action of which is known.

If one consults the pharmaceutist and the pharmacologist, and oneself pays attention to the last condition given above, one has every right to introduce a new combination into clinical practice.

What data are available to us when it comes to putting these theoretical considerations into practice?

The soporific effect of barbitals, like their toxic effect, seems to depend on the size of the alkyl group—at least this is so in the case of animals. If, however, both groups of the diethyl-barbituric acid are enlarged, the toxic effect is, indeed, diminished, but, after the propyl group, the narcotic effect is diminished also. In the case of compounds belonging to the general alkyl-ethyl-barbituric acid formula, the difference between the lethal and the toxic dose increases as the alkyl group grows, while the destructive action in the body takes place more rapidly. This rule is not, however, without its limits; it holds, up to and including, the amyl group. Amytal (ethyl-isoamyl-barbituric acid) is said to show the largest interval between the lethal and the effective dose in the case of cats. Then there are certain groups in which a convulsive quality is very much to the fore; others, such as, for instance, the benzyl group, which increase the toxic quality.

Of these narcotics, diethyl-barbital, phenyl-methyl-barbital, phenyl-ethyl-barbital and diallyl-barbital are unreservedly available to all; barbitals with a higher alkyl group are patented and in German, French and Swiss hands, so that in preparing or purchasing these one is dependent on a small number of firms.

Hence there are difficulties connected with the use of these higher compounds in other combinations, depending on the generosity of those who hold the patents.

The solubility of barbitals was, and is still, a difficult problem. One way in which it has been solved from a practical point of view is by making a solution with a weak base, diethylamine—a solution which is stable. It is necessary, however, to add alcohol and glycerin in order to keep the barbituric acid in solution.

The almost ideal solvents for these narcotics are the few ethers that are soluble in water. One belonging to this class is glycerin diethyl-ether (diethylene). Various narcotics and antipyretics may be dissolved in it. "Luminal Hoechst" is a 20% solution in diethylene. Unlimited use of this apart from the sanction of patent-holders is not yet possible.

Regarding the selective action of barbitals on different nuclei of the central nervous system nothing can yet be said with certainty. A mixture of barbitals prevents one-sided secondary effects.

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Small doses of antipyretics (pyramidon, for instance) strengthen the subcortical action of barbitals.

Caffeine shows another kind of action in this connection. If taken in sufficient quantity, it neutralizes the paralysing effect of barbitals on the respiratory centre. Because of improved circulation in the cerebral blood-vessels and better excretion of urine, soporific action is not disturbed, and as a result of this combination the toxicity becomes less; the permeability of the cells is increased by it.

The antipyretic action which we theoretically wish to achieve—we wish to avoid dangerous toxic pyrexia—is obtained in part by including such drugs as pyramidon in the mixture and partly by not allowing the dosage to be too high.

Diuresis, which is so hampered during prolonged narcosis, may be corrected, if necessary, by addition of cardiotonics, or better still, by caffeine. Antipyretics and barbitals inhibit diuresis; caffeine neutralizes this action.

" Non-specific " stimulant therapy, which in many cases has to be " specifically " chosen (as malarial therapy in dementia paralytica), is a problem which is as yet far from solved. Schrijver makes it seem reasonable to call barbital treatment a special instance of this therapy. In books on treatment in psychoses we find mention made of prolonged cures by antipyretic remedies, such as atophan and salicylates; malaria also is used, and in each case successes are reported, which are directly connected with the treatment.

Atophan, which is superior to other antipyretics in its " non-specific " stimulating action as an anti-rheumatic, also strengthens the action of brain-stem narcotics, if it is given in small doses.

If we try to compound a mixture satisfying all these theoretical requirements, we realize that small doses of antipyretics and caffeine must be given a place.

When we were trying to find a suitable vehicle, it became evident that the usual glycerin-alcohol-water mixture, together with caffeine sodium-benzoate, might be used for this, provided that the concentration of the barbital is reduced to half. The added pyramidon and atophan are also soluble in this. For the present we shall use phenylethyl and diallyl compounds in place of the higher patented alkyl barbitals.

An attempt to introduce veronal into this mixture failed. This mixture proved to have a too strongly inhibitive action on diuresis. Any cardiac tonic one may desire may be added.

The following are the components of the " *solutio barbamidoni* " now in use:

100 mgrm. phenyl-ethyl-barbituric acid.
100 mgrm. diallyl-barbituric-acid.
50 mgrm. dimethyl-amido-antipyrin.
50 mgrm. phenyl-cinchonic acid.
100 mgrm. caffeine sodium-benzoate.

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¼ mgrm. strophanthin cryst. (optional).

Dissolved in 2 c.c. alcohol-glycerin-water, consisting of glycerin 350 c.c., distilled water 130 c.c., alcohol to 1 litre.

This mixture, then, contains only half the barbituric acid which is contained in somnifen, for instance. So far it has been given only by the mouth. Its soporific quality seems to be less powerful during the cure than is that of somnifen, as is also the case with, say, dial liquidum.

Using the new mixture.—Since February, 1931, 44 treatments of two weeks each and longer have been given in my department. A third of these were successful. As the problem is a little different from what it used to be, and our aim is not so much to get through the treatment with the deepest possible sleep, but rather to make its course as quiet as we can, the dosage remained low.

The first cure is remarkable, and also proves how small a dose may be made to suffice.

Mrs. S—, æt. 58, moderate arterio-sclerosis. Was anxious at home, desperate and agitated. She gives continual expression to self-accusations which are really veiled attacks on her husband. In a mood of this kind she attacked her husband with an axe. Taken to the asylum in October, 1930, somnifen treatment without success. She remains inhibited, agitated, with hypochondriacal complaints. Assimilation of food is disturbed. Bodily condition deteriorating.

For eight days she is given 2 c.c. of the mixture twice a day (which corresponds to only 400 mgrm. of barbital per day).

She sleeps a great deal; is incontinent. On about the fourth day diuresis becomes normal. The sixth day she makes interested inquiries about various things. On the eighth day the treatment is stopped. The condition remains good. The temperature remains normal. *After* the cure her temperature rises twice to 37·9° C. (100·2° F.) in the evening.

On the sixteenth day she goes home recovered. She is still well.

Six months later a half-sister of this patient is brought in, also suffering from presenile melancholia agitata. She is given a course of treatment, reacts well immediately on a small dosage, sleeps little, but relapses directly after the treatment into the old psychosis. If the dose is increased, pyrexia appears immediately or else subnormal temperature. So far success has not been achieved in her case.

Successful cures have been given in cases of degeneration psychosis with circular syndrome, and twice in cases of depression in *debilitas mentis*.

The following successful cure in a case of catatonia is also remarkable:

Mrs. M—, æt. 48, comes of a family of psychopathic people. She has grown deaf gradually. On Easter Monday, 1931, she suddenly became psychotic; she heard funeral music on the radio; she acted aggressively towards her husband, and called out that she could not breathe. On April 8 she was taken to the asylum with an acute catatonic syndrome, excitable, making grimaces, clownish, cataleptic, hallucinated. At times she has lucid moments. April 12–24 a course of treatment with the mixture, average dose 3 c.c. twice a day. She sleeps comparatively little. During the treatment she presents a confusional picture.

At times she thinks she is being subjected to physical suggestion.

At first the temperature fluctuates between 36° and 36·9° C. (96·8° and 98·4° F.), but gradually the variation becomes less, and the daily excursion decreases. After the treatment her lucid moments increase. A week later violent fluctuations of temperature. After this a sudden improvement is noted. The patient is really quiet, and her thinking is no longer confused.

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May 9, discharged on trial. She is still psychically unstable, but is able to remain at home.

The treatment produced no result, strange to say, in three cases of melancholia in the climacterium. In one of these cases the treatment was given twice without my being able to observe any change in the psychotic condition; we were able to raise the dose to as much as 12 c.c. per day without danger (1·2 gr. barbituric acid). One of the patients (Miss K—) did react to a combined opium and luminal cure, where the dose was first gradually raised to a considerable degree and then suddenly stopped entirely. After this a change set in.

The following remarkable results with psychotics were also noted:

Miss L. W— always reacts to a barbital mixture with the disappearance of her suicidal tendency and sometimes with catalepsy.

Miss V—, who always became excitable when given somnifen, remained uninfluenced by the mixture. She suffers from a peculiar form of catatonia, and barbitals excite her. When she was given a *combination* of tinct. stramonii and solutio barbamidoni she got livelier than ever, and temporarily gave up refusing food, but became aggressive and restless.

In arterio-sclerosis this mixture in small doses has a mildly soporific effect; if all the necessary precautionary measures are taken, I do not consider that arterio-sclerosis need be regarded as a contra-indication to barbital treatment.

It seemed to me necessary to add these practical considerations on the action of barbitals on psychotic patients, because here hints are given regarding methods for the future.

If we want to achieve greater success, while risking less danger, in cases of psychosis and by means of this non-specific narcotic therapy, then we must first of all try to collect data indicating when the treatment is becoming dangerous. In my opinion we have now sufficient data at our disposal on this point and have passed the stage of groping experiment.

We enter a more difficult and as yet virgin field when we ask for indications pointing out the time to begin or end the treatment. To answer this question it will be necessary to make a more intense study of somatic concomitant symptoms in psychoses.

The next question is, What remedy and what combination of remedies must I use in these cases? The general conviction is that barbitals act electively in different psychoses; but *how* they work is not known. The solution of this problem depends on the study and classification of an enormous mass of experience of the action of different barbitals in different psychoses.

This study only sketches the beginning of a method of this sort.

Conclusion.

Psychiatric theories have hardly as yet emerged from the hypothetical stage—even less so than in other branches of medical science. When a theory has been formulated, this means rather conjecture regarding a single series

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of events than the statement of a law one thinks one has discovered. Such a theory was, and is, still a working hypothesis—a proof of a greater or less degree of constructive insight on the part of the experimentalist.

Let us bear the above limitations in mind when we put psychiatric theories to the test. If, on further examination, they prove fruitful and clarify difficult and complicated matters, then they have proved their right of existence however faulty they may later prove to be. Psycho-pathology is a science n the making; its fundamental principles are not yet definitely established; all its rules are still being fought over—every last one of them; and the many and various methods of research are being variously criticized. Hence the experimentalist who declares himself a supporter of a given significant theory is thereby giving expression to a creed, as it were, and still stands with one foot outside the region of verifiable experience.

To discuss the various theories concerning sleep would lead us too far beyond the scope of this study of the action of certain narcotics, although the subject is one which is indirectly connected with it. The important thing for psycho-pathology is the results that are ascribed to the prolonged narcosis treatment.

Kläsi's original plan, based on Cloetta's theory of narcosis, was to give rest to inflamed organs—in this case the hypothetically inflamed parts of the cerebrum. A secondary result was to be that of making the patient more approachable on account of his comparative helplessness during narcosis and more dependent on his environment, thereby making possible a closer contact between him and that environment and rendering psychotherapy possible.

Kläsi's treatment, however, brought success in several cases, without sleep being promoted by it, and without any positive psychotherapy being achieved.

The effectiveness of the cure does not depend on unconsciousness; the patients are often more excitable than ever. A change of psychotic phase is often observed during the treatment itself, the depressive stage giving place to the excitement of manic exaltation.

Oberholzer and Müller distinguish between different working principles in prolonged narcosis cures. They distinguish between cures in which only the inhibiting and narcotic action becomes apparent, and others during and after which the only result is an increase in approachableness, and others, again, which have no influence at all on the psychosis, but where a sudden change occurs after the course of treatment is ended. In some patients the treatment produces strange twilight states, while others achieve by means of it a more real adjustment to their own psychosis. Müller draws a clinical analogy between epilepsy and the manic phase. The epileptic attack may also be inhibited by chemical means, but this is often dearly paid for in lasting emotional anomalies, irritability, and an accumulation of "petit mal" attacks, until at last the postponed attack relieves the anomalous mood. This interpretation has led to the idea of epilepsy as an auto-intoxication. Müller thinks

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it was something of this sort that he observed in a case in the manic phase. After a successful dial-cure he still observed abnormality of mood, inhibition, etc. He also noted an accumulation of chemically inhibited manic attacks in patients treated by himself.

Müller comes to the same conclusions on clinical grounds as do Schrijver and the present author on biochemical grounds—that the treatment brings about a non-specific pharmacological alteration. That this action takes place in the ontogenetically and phylogenetically oldest parts of the brain will, I take it, be accepted.

Action on the brain-stem means, then, in these subjective terms, that an influence is exerted on an archaic part of the brain, a part which is connected with the genesis of the primal functions—the vital, regulating, rhythmically recurrent functions of life. It is just here in the study of this region that we find the conceptions of the physical and the psychical lying close to one another; subject and object can hardly be distinguished here as separate.

Every problem has its own general points of contact. Our subject may be confined to the question of the action of barbitals, yet our search for certain data brings us into touch with important psychopathological problems, which are significant from the practical as well as from the theoretical point of view.

The remarkable and varied clinical phenomena of barbital intoxication may be found of practical help in certain psychotic symptoms.

Nor is the following theoretical conclusion less significant: intoxication by barbitals has in the long run a very peculiar effect on our organism. I have tried to indicate that, by this intoxication, ontogenetically old parts of the brain are affected, but in such a manner that the withdrawal of the poison may influence psychotic processes favourably.

Probably other intoxications have the same non-specific therapeutic action on the psychotic process—malaria, manganese and salicylate therapy should be remembered at this point. Barbital therapy has this advantage—that it brings rest in restlessness.

Last, but not least, this therapy again draws our attention to the somatic concomitant phenomena in psychoses, which are localized by many chiefly in the brain-stem.

Summary.

1. Sufficient clinical material regarding barbital intoxication has been collected to make it possible to draw conclusions, while sifting the complications, regarding the action, point of contact and so forth of barbitals.

2. Within the limits of psycho-pathology we must consider this sedative as a specific poison, which induces and affects local biological processes, but at the same time as a non-specific factor, which only lays bare a more deeply buried psychic structure.

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3. Clinically speaking, we may resolve the action of barbitals to action on the subcortical brain centres—the brain-stem in its widest sense. Pathological-anatomical discoveries support this.

4. The secondary phenomena produced by barbitals, such as catatonia, epilepsy, hallucinations, etc., are of interest to psycho-pathology; they constitute a contribution to our knowledge of the function of the palæencephalon.

5. Prolonged treatment of psychotic patients with barbitals is of great therapeutic value. The effect of this may be compared with that of non-specific stimulant therapy. Sudden disintoxication is an important factor here, and sleep constitutes no very real element. This therapeutic method—especially as far as concerns the avoidance of dangerous secondary action—is susceptible of improvement, and needs further systematic study.

6. We are now at the beginning of a systematic therapy of psychiatric symptoms.

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[Recent work in this country is referred to on pp. 408 and 412 of this issue.—Eds.]

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Medico-Legal Notes.

REX *v.* CHARLES WILLIAM ROSS.

FOR the information concerning this case we are indebted to a report provided by Dr. H. L. Gordon, of Nairobi, Kenya Colony.

The case was tried at Nairobi on November 28–December 1, 1932, before the Chief Justice of Kenya Colony.

The accused was 20 years of age. He is reported as having been only 4 lb. in weight at birth, and as not walking until his 22nd month. In childhood he was solitary and given to wandering, and came under the influence of the "Wanderobo", a primitive forest-dwelling tribe. He was given to sulks and "hysteria", and was remarkably resentful of correction. At school he took no interest in games, and was backward at work. He left school at 16, and obtained a clerical post, which he held at the time of the tragedy. He was known at this period as morose, solitary, and uninterested in sex matters. There is a history of an attack of "acute hysteria", which was followed by a speech stammer lasting for some weeks. His clerical work was satisfactory. He spent his leisure time in shooting game. He is said to have been greatly excited after the animal was shot, and would cut its throat, or otherwise end it, "with gusto". During the six months prior to the tragedy his family were struck with his increased moroseness and solitary habits.

On October 2 the accused visited a family named Stephenson, and saw a girl named Winnie Stephenson, whom he is said to have "worshipped silently". He also saw a visitor named Margaret Keppie. On October 6 he obtained a motor-car, some rugs, scent and other feminine toilet articles, a curious stock of provisions, and a length of rope. The goods were obtained by means of an order signed in the name of a principal in his employers' firm, but without any attempt to disguise his handwriting. He called for the girls about 8 p.m. and left their home, ostensibly to conduct them to a cinema. Nothing more was heard of the party until October 8, when Margaret's body was found in an old crater. Meanwhile, the accused had been found beside his ditched car. He is said to have been incoherent and confused, and to have refused food. On October 15 he led the police to the dead body of Winnie, which was lying three miles from the place at which the body of the other girl had been found. In both cases death was due to a bullet wound at the back of the head. In the case of Margaret there was also some evidence of

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strangulation. There was no evidence of rape on the bodies, but seminal stains were found on the clothing of the accused. He made a statement to the effect that Margaret had grabbed at his revolver, he had "seen red", had dragged her from the car and shot her. Winnie had begged to be taken home; they walked until she sank exhausted; "she looked so pretty, I shot her; the moon was just coming up over the hill". In a later statement he said that he had shot seven zebra on October 5, had become much excited over their blood, which had "affected his head", and that he had been troubled for some time with a "blood lust".

At the trial the facts were not disputed, and the defence was that of insanity. Dr. Dickson, medical officer to Nairobi Prison, thought that the accused had shown signs of insanity, and also thought it possible that the accused did not know the difference between right and wrong at the time of the act. Dr. H. L. Gordon stated that he had seen the accused twice, at the direction of the Crown, and had then been asked to suspend his inquiry. Later he had seen the accused at the request of the Defence. The witness considered that the accused was certifiable under the English Mental Deficiency Act, 1927 (there is no legislation of this kind in Kenya, nor would mental deficiency be a defence in a capital case in England). By the Porteous test the mental age of the accused was 9½ years, by the Stanford-Binet test it was about 11½ years, but the latter would have been lower had it not been for success in the arithmetical tests. An X-ray photograph of the skull showed that the sella turcica was abnormally small, and the clinoid processes so closely approximated as to prevent expansion of the pituitary gland. The thyroid was enlarged, and the testicles were small. Dr. Gordon considered that Ross was deficient in reasoning, foresight and judgment, and that he suffered from marked lack of control of his sex impulse. At the time of the crime he was probably suffering from this abnormal urge, and did not know the nature and quality of the act.

No rebutting medical evidence was called. Counsel for the Defence wished to quote cases reported in the *Journal of Mental Science*, but the judge upheld the objection taken by the Prosecution. The judge summed up on strict "McNaghton lines", and rejected the defence of uncontrollable impulse. A verdict of "Guilty" was returned, and sentence of death was passed.

An appeal was entered, and this was heard on December 21–22. Counsel for the Defence referred to the cases of Ware and Thick, reported in this Journal, and made their exclusion in the court below a ground of appeal. The question was argued. The presiding judge is reported as saying that the authors of the Ware and Thick reports would be "very anxious to get away from McNaghton insanity". The appeal was dismissed; the sentence was confirmed by the Governor's Council, and Ross was executed on January 11.

This is, we believe, the first occasion upon which reports of medico-legal cases in this Journal have been officially referred to in a court of law.

Dr. Gordon presents a theory as to the cause of the crime. He holds that

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it was due to an inborn sadistic perversion, contributed to by anatomical, physiological and psychological defect, and capable of manifestation in a reaction classifiable as " irresistible impulse ". (Dr. Gordon obtained evidence that Ross's father could be regarded as a psychopathic, sadistic pervert.) Ross, himself, can be looked upon as an undetected moral defective, with a recurrent perversion satisfied, previously to the crime, by the infliction of violence upon animals. His mental development had been arrested at a low level before the stage when personality is enriched by ideals. His " worship " of Winnie was an abortive attempt towards an ideal ; we have no evidence as regards her attitude towards him, but it clearly was not repellent. He " wanted " Winnie ; and when circumstances put the opportunity in his way, he succumbed to the perverted impulse which urged him to destroy both the girls. The evidence of strangulation in the case of Margaret must be considered in relation to his violence towards the animals which he had shot. Other points which have to be taken into account are the peculiar collection of articles which he took with him on the expedition, the cords having been cut from windows in his office with no attempt at concealment ; his neglect to conceal the traces of his crime, or to make any attempt to escape ; and the fact that seminal stains were found upon his clothing, although no sexual assault had been committed on the bodies of the girls. In his *Psychopathia Sexualis*, Kraft-Ebing refers to " lust-murders " in which rape is omitted and the sadistic crime becomes the equivalent of coitus.

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Clinical Notes and Cases.

A NOTE ON THE USE OF NEPHRITIN IN PSYCHOTICS.

By D. N. PARFITT, M.D.Lond., B.Sc.Wales, D.P.M.,
Assistant Medical Officer, Warwick County Mental Hospital.

THE action of the internal secretions of the kidney is a debatable subject, but the following brief note seems to show that nephritin (Reed and Carnrick) has a definite if limited use in certain psychotic cases with renal insufficiency.

Its use would seem to be confined, at least in chronic nephritic conditions, to those cases with azotæmia which fail to respond to stringent dietary restrictions; in these, with an adequate dosage of at least 20 tablets a day, the improvement is often remarkable. The preliminary and concurrent limitation of diet to milk and water in equal parts, with glucose and fruit-juice, is essential. The mental improvement is proportional to the degree of confusion present due to renal toxæmia, and where this is absent no change is produced in the psychosis.

If dieting alone produces a marked improvement, then nephritin will do no further good even if the renal condition is still unsatisfactory. The azotæmia of wasting conditions is unaffected by nephritin.

ILLUSTRATIVE CASES.

(1) Female, æt. 57, with advanced cardio-renal degeneration. Admitted in a markedly confused, noisy and restless condition. The heart was generally enlarged, arteries tortuous and thickened, blood-pressure 200/130, pulse-rate 95. Albumen was present throughout in repeated samples of urine.

On the second day the blood-urea was 139 mgrm.%. On the sixth day, despite the most careful regulation of the diet, given in tube feeds, the blood-urea was 156 mgrm.% and the general condition unchanged. Nephritin was commenced on the eighth day and on the sixteenth day the blood-urea had fallen to 32 mgrm.% and the clinical improvement was proportionate, the patient already appearing convalescent. The nephritin was stopped, and thereafter the diet was slowly increased. A month later the blood-urea was 44 mgrm.%, but with a further course of nephritin there was little change in the blood-picture, the urea content rising to 47 mgrm.%. The patient was quiet and pleasant, with some residual dementia.

(2) Female, æt. 39. Marked confusion with excitement. Blood-pressure 130/85, pulse-rate 90. Urine albuminous. On the fourth day the blood-urea was 61 mgrm.%, and this fell to 38 mgrm.% in a fortnight following restriction of diet. Clinical improvement was marked. Broncho-pneumonia developed with a full

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return of symptoms and the patient's condition was regarded as grave. The blood-urea rose to 62 mgrm.%, and a fortnight later, although the temperature had been normal for one week, the urea-content was still 67 mgrm.%. On full doses of nephritin the reading was 46 mgrm.% in 3 days, 34 mgrm.% in 7 days and 18 mgrm.% in 10 days. This patient had been on a strict diet for 3 weeks. Clinical improvement was coincident and the patient was later discharged.

(3) Female, æt. 59. Persistent hypomania following an acute attack. Five months after admission and following a rapid early improvement the patient remained hypomanic, but was then slowly improving. There was a history of chronic nephritis, the urine always contained albumen and the blood-pressure was 145/80. At this time the blood-urea was 66 mgrm.%. A course of nephritin with partial dietary restrictions produced no change. A diet of milk and water with glucose and fruit-juice reduced the blood-urea to 42 mgrm.% in 6 days. A further course of nephritin on the same diet left the blood-urea at 47 mgrm.% a week later.

(4) Female, æt. 23. Puerperal, admitted 3 weeks after the birth of her child. Mental condition suggested a depressed schizophrenic. Blood-pressure 150/110, pulse-rate 90. The urine contained much albumen with sugar, acetone, indican, and a heavy growth of *B. coli* on culture. On the fourth day the blood-urea was 62 mgrm.%. After a fortnight the blood-urea had fallen to 37 mgrm.%, but the urine contained albumen and granular casts. There was no mental improvement, and an ordinary diet was now given. Four months after admission the urine still contained albumen, and the blood-urea was 44 mgrm.%. The blood-pressure had fallen to 90/62. A strict diet was ordered and ephedrine prescribed, and in three weeks the blood-pressure had risen to 120/80 and the blood-urea was 35 mgrm.%. An intensive course of nephritin produced no change, and a month later the blood-urea was 33 mgrm.%, being still 37 mgrm.% four months after that. There had been no mental change, although the patient gradually improved and was discharged twelve months after admission.

(5) Female, aged 52. Agitated melancholia with increasing cachexia. Four months after admission the blood-urea was 90 mgrm.%, and regulated tube-feeds and diet reduced this to 50 mgrm.%, but a further course of nephritin failed to lower this figure. This patient died eight months after admission.

The blood for the urea estimations was taken before the mid-day meal in all cases.

I wish to thank Dr. A. T. W. Forrester for permission to publish the notes of these cases.

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AN IMPROVED COLORIMETRIC METHOD FOR THE DETERMINATION OF THE BROMIDE CONTENT OF BODY FLUIDS.

By HENRY TOD, B.Sc., Ph.D.Edin.,

Walter Smith Kay Research Fellow; Biochemist, The Royal Edinburgh Mental Hospital.

THE administration of large doses of bromides to patients before their admission to mental hospitals sometimes renders the medical officer's task on receiving the patients a more difficult one. Bromides, in addition to their sedative action, have a definitely toxic effect, which varies from person to person. Their effect is cumulative, and the toxic manifestations range from confusion and apathy to delirium. In many cases the confusion is difficult to distinguish rapidly from a confusion due solely to the patient's mental condition, and the delirium often simulates general paralysis very closely, as in the case reported by Henderson (1). In this case a typical picture of general paralysis is cleared up on stopping the bromide, the Wassermann reaction being negative for both blood and cerebro-spinal fluid. In these circumstances it was felt that a knowledge of the bromide level would be of considerable value. The ordinary method for bromide is Wuth's method (2) (quoted in a modified form by Katzenelbogen and Goldsmith (3)). This method is useful for the meningeal permeability test, where relative values are required, but it suffers from the disadvantage that the absolute values given are not entirely accurate. It was accordingly decided to attempt to improve this method, so as to be able to determine with greater accuracy the blood bromide content, and its alteration during treatment. The following is the modified procedure:

METHOD.

Two c.c. of the fluid (blood, plasma, serum or cerebro-spinal fluid) are pipetted into a 10 c.c. standard flask, and the pipette washed out into the flask with 4 c.c. of distilled water. If blood is used, the blood and washings are allowed to stand for 5 minutes to lake. To this is added 2 c.c. of a 20% aqueous solution of trichloracetic acid, the flask filled to the mark with distilled water, shaken thoroughly, and left to stand for 30 minutes. This allows the protein to precipitate completely and settle. The supernatant fluid is then decanted carefully into a filter-paper, the precipitate and the rest of the fluid being added after the bulk of the first portion has passed through the filter. By this means the required volume of filtrate may more readily be obtained. Five c.c. of this filtrate are mixed with 5 c.c. of a 0·25% aqueous solution of " brown gold chloride " (auric chloride), and compared in a

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good colorimeter against the standard solution described below. The comparison should be made without delay, as the colour tends to alter.

Standard solution.—It was found that using a standard solution of potassium bromide, a perfect match of colour with the blood filtrate could not always be obtained. Now, auric chloride solution mixed with a bromide solution gives a reddish-brown solution of auric bromide, but if an iodide be substituted for the bromide, a very intense greenish-brown turbidity is produced, which, in extreme dilution, becomes a clear greenish-brown solution. Kendall and Richardson (4) quote the iodine content of blood as 0·013 mgrm. per 100 c.c. blood, and accordingly enough iodide was added to the standard bromide to give a solution containing 100 mgrm. % KBr. and 0·015 mgrm. % KI. Using this mixed standard a much closer colour match is obtained. The standard solution is prepared as follows:

(a) *Stock solution.*—Weigh out accurately 1 grm. of potassium bromide (pure) and transfer to a 100-c.c. standard flask. To this add 0·15 c.c. of an accurately prepared 0·10% solution of potassium iodide (pure) and make up to the mark with distilled water.

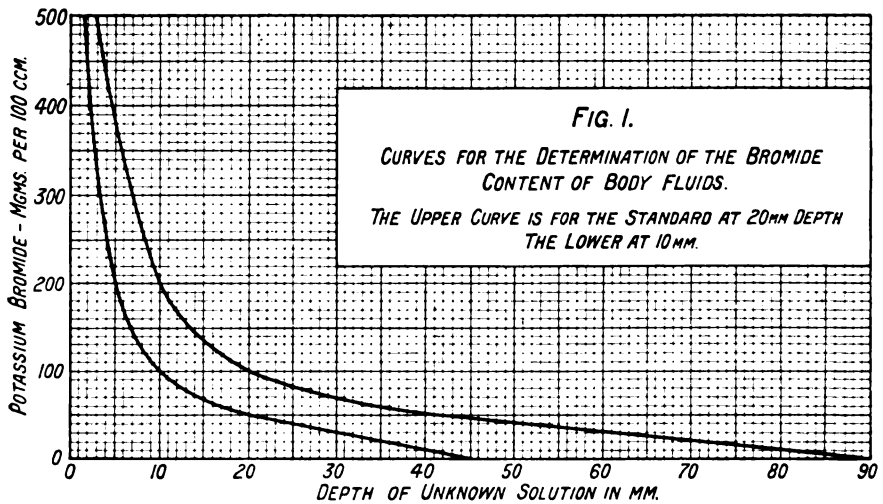

FIG. 1.

CURVES FOR THE DETERMINATION OF THE BROMIDE CONTENT OF BODY FLUIDS.

THE UPPER CURVE IS FOR THE STANDARD AT 20MM DEPTH THE LOWER AT 10MM.

(b) *Standard solution.*—Pipette accurately 2 c.c. of the stock solution into a 100-c.c. standard flask. Dilute to the mark with distilled water and mix.

For each determination take 5 c.c. of the standard solution, add 5 c.c. of the gold chloride solution and mix.

Using the above method, two series of determinations were carried out, the first being with pure solutions, and the second with blood to which known amounts of bromide had been added. Two curves were obtained which proved to be identical. The quickest and most practical way of using this method is to make the colour comparison with the standard solution set at either 10 mm. or 20 mm. depth according to the intensity of colour in the unknown solution, and then read off the bromide concentration from the graph (Fig. 1). For the higher concentrations (above 300 mgrm. %) the curve obtained departs from the theoretical curve, giving high values if the calculation method be used. Below 300 mgrm. % the curve follows the theoretical, and the values obtained by calculation are identical with those from the curve. The error, if the method is carried out carefully, should be well below 5%.

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SUMMARY.

1. An improved colorimetric method is described for the determination of the bromide content of body fluids, requiring 2 c.c. of the fluid.

2. It is suggested that this method may be of use in rapidly ascertaining whether a confused or delirious state is due to bromide intoxication or not.

My thanks are due to Prof. D. K. Henderson, Physician-Superintendent of the Royal Edinburgh Mental Hospital, for giving me the facilities for carrying out this work, and to the medical staff for their co-operation. Part of the expenses of this work were defrayed by a grant from the Moray Fund of the University of Edinburgh, to which I wish to express my indebtedness.

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Part II.—Reviews.

The Psycho-analysis of Children. By MELANIE KLEIN. London: The Hogarth Press and the Institute of Psycho-analysis, 1932. Demy 8vo. Pp. 395. Price 18*s*.

Mrs. Klein writes with full authority on the analysis of children, for it was she who first saw in their play an expression of unconscious phantasy as well as of conscious intention. Then, devising the play technique as a means of mental exploration, she was able accurately to define in children the core of unconscious phantasy which exists in the mind of every individual, and which had previously been discovered by a study of the behaviour of adult patients. Her work has led to a critical scrutiny of psycho-analytic theory, and to various advances in the technique of analysis. To the analyst, therefore, this book is of paramount importance. It remains to be asked what the psychiatrist stands to gain by reading it, if he has no chance of analysing children and little interest in the principles of psycho-analysis. In the first place he will find in it such a description of neurotic illness in childhood as has not yet been written, for it is one which relates the behaviouristic signs of neurosis to the unconscious conflict which provokes them. For while physicians and teachers have long agreed that the fears of children are related to unconscious processes, this book goes further and shows how profound and direct an effect is exerted by phantasy on the child's immediate actions. Here it is both explicit and convincing.

Mrs. Klein describes the entire gamut of phantasy. Thus in the case-history of Erna (pp. 66–74) there is a detailed presentation of sadistic and libidinal phantasies. And because they are recorded exactly as they were explored during analysis, being expressed now in play, now in the hopes and fears the child felt from day to day regarding her parents and the analyst, they create for us a vivid picture of the dangerous world in which the little girl lived, and of her anxious attempts to survive in it. Another of the reported cases (p. 27) demonstrates exactly how the component parts of an obsessional ritual combined to relieve anxiety which had been provoked by aggressive phantasy; and in another case (pp. 106–111) we learn why specific forms of play and intellectual activity came to be inhibited.

When considered in relation to such actual happenings the interaction of phantasy and conduct becomes a credible thing.

Finally, we get an idea of the close *rapport* which exists between Mrs. Klein and her patients. It is shown, for instance, in the simplicity of approach in the doctor game (p. 113), in the interpretations which cut short Ruth's anxiety attacks (pp. 53–57), and in the detection of phantasies which underlay the most monotonous and apparently insignificant actions (pp. 132–133). Reading these descriptions of technique we can appreciate how each interpretation relieved the patient's anxiety, how also it gave access to phantasies

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that had previously been repressed, and licence, therefore, to activities that had been inhibited. We can, in fact, accompany the analyst in her exploration of the unconscious mind.

There are criticisms also to be made. The form of the book makes special difficulties for the reader. In most cases a paper previously published in the *International Journal of Psycho-analysis* is the nucleus around which a chapter is written. On this account material is approached from many different angles, and one chapter recapitulates what another has already stated. Some of the chapters, too, bewilder us, for we have to pass from considerations of technique to theoretical statements, and from one short clinical abstract to another. Fortunately, the confusion entailed by such construction is mitigated by an excellent index.

The book is a long one, and it seems exacting to ask for it to be still longer. But in both text and footnotes much material is condensed which we wish had been expanded; as, for instance, that which deals with the history of various patients and with actual events of their infancy and early childhood. For whilst the relation of neurotic symptoms to phantasy is made brilliantly clear, there is not the same clarity about their relation to the experiences of the ego. It is this relative obscurity that makes interpretations of some symptoms and play during analysis seem arbitrary. The phantasy is there; and when we consider the daily life of any infant we can guess what special tactile sensations, sights or sounds stimulated and gratified his instincts in the first instance, thereby laying down the pattern of his unconscious reactions. But interpretation of play cannot well be made convincing to the reader until the phantasy underlying the play has been connected with specific experience—as must have been done for the child during analysis. To record the connection at length another volume would be required, and to this volume we look forward with the greatest possible interest.

MERELL P. MIDDLEMORE.

The Physical Mechanism of the Human Mind. By A. C. DOUGLAS. Edinburgh: E. & S. Livingstone, 1932. Pp. 251. Diagrams 24.

This book is written by a surgeon, and purports to explain the whole of psychology in terms of physiology. The concepts of modern psychology are discussed as "mythical excrescences", and the psychology favoured by the author is associationism, behavourism and gestaltism. The author claims that his book presents "a complete scientific theory of mind upon the materialistic basis which behavourism rightly demands". He attempts to do this by an ingenious application of the phenomena of inhibition and chronaxy, with which he takes entirely unwarranted liberties. Such application of partially understood phenomena to form purely speculative hypotheses is entirely unscientific, and, while the results obtained may be interesting, they cannot be regarded as of any real value. The uncritical spirit in which the author supports his hypotheses is seen in his habit of choosing isolated hypotheses from different writers, and treating these as facts when they help to bolster up his views. Thus, a suggestion put forward in 1890 by Münsterberg that our time-duration sense is dependent on respiratory rhythm is taken as the basis of the author's suggested mechanism of our time-duration sense. Again, for his physiological explanation of the emotions he accepts the James-Lange

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theory, and appears to think that the only adverse criticism to this has been Sherrington's animal experiments, and these the author dismisses quite lightly.

The book is quite readable, and may appeal to " the general reader ", for whom it is mainly written, but physiologists and psychologists will scarcely regard it as a serious contribution to the subject with which it deals.

P. K. McCowan.

Les Séquelles de l'Encéphalite Epidémique. By G. Guillain and P. Mollaret. Paris : G. Doin et Cie. 1 vol. in 8vo. Pp. 104. Figs. 21. Price 28 fcs.

The literature dealing with chronic epidemic encephalitis is already very extensive, but the present monograph can be welcomed as an extremely useful exposition of the clinical aspect of the subject in the light of present-day knowledge.

In a short introduction, the authors point out how, with greater experience, the symptoms credited to the encephalitic process have become more and more numerous, but they very rightly warn against the very real danger of the uncritical inclusion in the chronic encephalitic syndrome of neurological symptoms of obscure origin.

There is a special chapter dealing with the parkinsonian syndrome, and the authors refer to certain cases which did not start till as late as five to ten years after the original acute attack. Perhaps because the French workers, Cruchet and Souques, hold that Parkinsonianism and paralysis agitans are the same disease, the authors are at pains to emphasize their view that the two conditions are different diseases which merely happen to have a similar pathological localization.

In discussing the clinical forms of Parkinsonianism, doubt is expressed whether there is such a type as the pure bradykinetic or akinetic type described by many authors. Instead it is suggested that sooner or later in these cases hypertonicity and exaggeration of the reflexes of posture appear, turning the case into the usual akinetic-hypertonic parkinsonian.

Following the chapter on Parkinsonianism come those on dystonias, abnormal movements, sensory troubles, affections of the special senses, vegetative, endocrine and visual disturbances. Most of these are dealt with very shortly, but plentiful references are given.

In discussing dystonic troubles, it is pointed out that torsion spasm is the most common of these, that such spasms are extremely rare apart from encephalitis, and that the authors have found stramonium superior to scopolamine in their relief.

In the chapter dealing with psychic disturbances, a number of references are cited in which the suggestion is made of a connection between Parkinsonianism and the catatonia of dementia præcox, but the authors rightly emphasize that the resemblance is merely due to a similar localization of the pathological processes in the two diseases.

A short chapter on diagnosis precedes the final one on treatment.

The references throughout the book are not unnaturally almost exclusively to French authors, and, singularly enough, one of the few mistakes in the book is in the short section dealing with therapeutics, where McCowan and Cook are incorrectly stated to have obtained good results with malarial therapy.

As this admirable monograph does not add anything new to our knowledge

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of chronic epidemic encephalitis, to the English reader Newman's recent translation of v. Economo's *Encephalitis Lethargica* must remain at present the standard work of reference on this subject. P. K. McCowan.

Letters from Sir Oliver Lodge. By J. Arthur Hill. London: Cassell & Company Limited, 1932. Pp. xiv + 268. Price 10s. 6*d*. net.

This book gives us selections from letters written to Mr. Hill during a period of over twenty years. Brief explanatory and connecting notes are provided. As we should expect, the subject of "psychical research" furnishes the greater part of the matter dealt with. The attitude adopted is a perfectly rational one. Certain phenomena are investigated, and an hypothesis is framed which is believed by Sir Oliver Lodge, and those who think with him, to explain the observed facts. When a better hypothesis is enunciated, he will be ready to accept it. Readers are warned against the fraud with which this line of research has been so largely mingled. The possible dangers of "psychical research" are recognized. It is of interest to learn, in view of certain charges which have been made, that Sir Oliver Lodge attained "full conviction" on this topic many years before his son Raymond was killed.

Apart from "spiritism", however, many other matters are dealt with in the letters. "Mind is a real thing, not a property of brain-cells. It is not produced by the brain, though it manifests through it. Consequently mind may exist without brain." "Neither parallelism nor epiphenomenalism, but interactionism seems to contain the clue." Sir Oliver Lodge considers that "the cosmos is, in some sense or other, the body of God; that is, it is God's mode of manifestation, or one of His modes". It is, perhaps, curious that he does not mention Spinoza, with whose line of thought the last quotation would seem to connect. There are some striking remarks on the "finite" conception of God, pointing out why this view is so attractive to a particular type of mentality.

We have some interesting sidelights upon the personal character of Sir Oliver Lodge. The eminent physicist comments pungently upon current political theories, sets his friends ingenious arithmetical problems, speculates on the origin of the order of the cards and the relative value of the suits in the game of bridge, and confesses to his hearty enjoyment of the stories of Mr. P. G. Wodehouse. We have the picture of a kindly, "human" personality. There are several excellent aphorisms, of which we would quote two: the universe "is rather less simple" than we imagine it to be, and "the lack of infallibility is the one certain attribute of man". M. Hamblin Smith.

Effective Thinking. By Joseph Jastrow. London: Noel Douglas, 1932. Pp. xvi + 264. Price 7*s*. 6*d*. net.

The motto of this book is "We do not think enough about thinking, and much of our confusion is the result of current illusions in regard to it". The author describes the procedure of thinking, and the various elements of thought. The large range of symbolism is indicated. Various impediments to correct thought, such as prejudice and prepossession, are discussed. The book is not intended as a scientific publication; it is written for "busy people, who are not

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too busy to reflect upon the reasons for their own mental behaviour". Whether any advantage is gained by giving "busy people" this kind of condensed psychological information is a question which may be debated. The author remarks that "the precious asset of a nation is its citizenry of effective thinkers". We fear that it will be long before the numbers of that citizenry are appreciably increased by books of this kind.

M. HAMBLIN SMITH.

Aspasia: The Future of Amorality. By R. E. MONEY-KYRLE, M.A., Ph.D. London: Kegan Paul & Co., Ltd., 1932. Pp. 142. Price 3*s.* 6*d.* net.

The thesis of this book, named after the celebrated Greek courtesan, maintains that the frustration of our sexual impulses leaves behind it a legacy of hatred which has a most deleterious effect upon the entire social, political and economic sphere. Dr. Money-Kyrle holds that our civilization is in so desperate a condition that we must take account of every possible remedy, however drastic such remedy may appear. His suggested remedy is the development of amorality.

The author's argument may be briefly summarized as follows: The ambivalent relation between children and parents is repeated in society between the people and their rulers. No social system can endure, unless the unconscious causes of revolution are removed. The ramifications of the Œdipus complex occasion many of the national and social animosities which impede our attempts to improve the existing economic depression. Complete escape from the Œdipus complex is impossible, but its malignant operation is greatly enhanced by our present system of morals. Consequently a thorough change in our views on sex morality is urgently called for.

The thesis thus enunciated presents many questions of a highly controversial character. We may ask, in the first place, whether the present condition of the world is quite so desperate as Dr. Money-Kyrle would have us believe. Pessimistic views of this kind have been current in former ages. Many readers may think that undue stress is laid upon the influence of specifically Christian ascetism; other religious systems have had their ascetic side. It is open to argument whether the lives of those who adopt a more "free" attitude in sex practice are, as an observed fact, really happier than of those who pay deference to convention. Such are but a few of the problems which the book raises. But the author urges (as does Prof. J. C. Flugel in a preface) that the primary necessity is to induce people to think. Such an object is so desirable, and so difficult of attainment, that any attempt thereat is to be welcomed. We hope that many of our readers will find an interest in this intriguing and well-written little volume. M. HAMBLIN SMITH.

Studies in Sociology. By MORRIS GINSBERG, M.A., D.Litt. London: Methuen & Co., Ltd., 1932. Pp. x + 212. Price 6*s.* net.

These essays are concerned with questions which lie on the borderline between social philosophy, psychology and biology. They may be placed in three groups. Social psychology is defined as the science which seeks to determine the nature of the psychological conditions of social life. Sociology must be distinguished from social philosophy, which is concerned (*inter alia*) with

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the problem of values. The view that sociology and history differ as regards their subject-matter does not seem to be well substantiated; the knowledge of the universal and the knowledge of the particular are inseparably intertwined. Prof. Ginsberg gives a most interesting discussion of "social purpose", pointing out the danger of assuming that an institution which exists to-day is the same as that which was called by the same name in former days.

The second group of essays is concerned with an analysis of the evolutionary theory as applied to society. It is urged that much of the controversy which surrounds this topic is due to the different senses in which the term "evolution" has been employed. There is no unilinear development in the history of mankind, and we must be careful not to set up some particular civilization as a standard, and identify its development with the development of humanity. But social continuants are genuine, possibly emergent wholes. The conception of growth is still useful and necessary in sociology.

After some very just criticism of the loose manner in which the term "intelligence" is often used, Prof. Ginsberg takes up the subject of instinct. He maintains that the chief defect of instinctivist psychology has been its tendency to break up the mind into discrete atomic units. It has been unduly influenced by prevalent theories of the mechanism of inheritance. The theory of mental inheritance should be based upon a direct study of the facts of psychology, and not deduced from theories framed upon a study of the inheritance of physical characters. Still the cumulative effect of the available evidence suggests that heredity plays a part in determining individual differences in mental characters.

The final group of essays deals with what some would call more "practical" subjects. The question of interchange between social classes is taken up. So far the "social ladder" lifts only relatively small numbers; but there has been an increase of upward mobility in the present generation, while the downward movement is slight and nearly constant. As regards eugenics, Prof. Ginsberg takes a very cautious line, rejecting many of the extravagant claims which have been made. Eugenics must free itself from the charge of class prejudice, and must forsake its tendency to take relative poverty as a criterion of "unfitness". But when there is evidence of serious hereditary defect, society may have the right and the duty to prevent parenthood. Here, as elsewhere, social policy must wait upon advancing knowledge.

The book is a most worthy one. The sole criticism which we have to make is that its preparation as a series of essays necessarily detracts from that continuous presentation which is so desirable in a work of this kind.

M. HAMBLIN SMITH.

Humoral Agents in Nervous Activity, with Special Reference to Chromatophores. By Prof. G. H. PARKER, Harvard University. Cambridge University Press, 1932. Demy 8vo. Pp. 79. Figs. 19. Price 6s. net.

Within recent years the phenomena of colour-change in various groups of the animal kingdom have led to a revision of our conception of the relationship between the effector systems of the body and their corresponding nerves. The present book gives a connected account of modern work and discusses the secretory activity of the nervous system. Prof. Parker brings forward experimental evidence in support of his contention that nerve-fibrils or terminals

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are capable of secreting hormones, which act on the neighbouring effector organs and call forth their appropriate actions. He maintains that although the distance to be travelled by this hormone from its point of secretion to its point of application may be microscopical, yet in principle it does not differ from the concept of hormones propounded by Bayliss and Starling. Another extremely suggestive piece of evidence is where it is shown by difference of histological structure that the synapse has a secretory and receptive side.

The work is a most important contribution to the study of the nature of nervous activity, and brings forward evidence in support of problems which open up entirely new lines of research, the solution of which will probably be dependent on the combined efforts of the physiologist and the biochemist.

The book itself is divided into four chapters. The first is introductory, and in it the author traces the evolution of the receptor, effector and adjustor in the development of the nervous system, and states that his purpose is " to consider the mutual relations of these several constituents of the nervous system both in their fully developed condition and in their evolution, and to discuss in particular the importance of secretion as a controlling factor in the various operations, especially those shown by chromatophores ". These chromatophores are the integumentary cells by which a number of animals make temporary changes in the colours of their skin.

In Chapter II the work done on vertebrate chromatophores is reviewed. This colour system took its origin in fishes, was transmitted from them to the amphibians, and thence to the reptiles. The present experimental evidence suggests that the system is now controlled in amphibians by hormones, and in fishes and reptiles by nerves. Prof. Parker points out that this succession of changes in control must arouse scepticism, and his hypothesis offers an explanation of this seeming anomaly.

In Chapter III, crustacean chromatophores are dealt with, and it is shown that these are controlled by a process which involves both nerve and gland, so that they can be said to be under neuro-humoral control. Some of the secretions, like adrenaline and pituitrin, come from well-defined nervous organs, but others appear to come from the nerve terminals of sympathetic fibres, " a state of affairs that suggests that the secretory activity of nerves may be a phenomenon of wide application and of great biological significance ".

The final chapter deals with neuro-humoralism, and in this the author elaborates his hypothesis, and also deals with the histological evidence in favour of the synapse having a secretory and a receptive side.

The author freely appreciates the tentative nature of his neuro-humoral hypothesis, and stresses the fact that the extent to which it applies to the nervous system is a problem for future investigation.

P. K. McCowan.

Lying and its Detection. By John A. Larson. Chicago: University of Chicago Press, 1932. Pp. 415. Price 27*s.* 6*d.*

The title of this book is somewhat misleading, inasmuch as the work deals, not with lying *qua* lying, but rather with criminological methods of obtaining and evaluating statements and confessions. Yet in a day when criminology is so largely in the hands of light-headed cranks, and legal casuists whose babble of " science " merely confuses the issue, the appearance of an objective and clinical treatise is most welcome.

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The first part of the book consists of excerpts from the wide field of the literature upon deceit. Such a method tends toward reiteration and even confusion, and this has happened here, the more purely psychological chapters suffering most. The chapter on pathological lying, for instance, is weak ; the term is extended to cover malingering, and the concept of mythomania is not discussed. The chapter on the prevalence of lying will be disturbing to the optimistic " believer in human nature ".

There is a long historical section giving interesting accounts of the methods of trial by combat, ordeal and torture ; and there is a story of a Milanese judge (surely the earliest criminologist !) who, doubting the validity of torture, deliberately allowed a false charge to be made against a servant. The man was tortured and confessed, maintaining his confession after torture. The judge, convinced of the fallacy of the method, resigned his office and betook himself to an ecclesiastical career, in which he rose to cardinal's rank.

Of more immediate interest is the chapter on American police methods. The contrast with the preceding section is not great, for the notorious " third degree " evidently relies on mental and physical torture. The whole of modern legal procedure and more particularly the jury system is weighed in the balance and found wanting, though Dr. Larson evidently considers English methods the best of a bad lot.

The various attempts at scientific detection of lying are discussed at some length. The psycho-galvanic reflex, the word-association methods and Whately-Smith's attempt to combine the two are reviewed, as well as House's scopolamine method—the " truth serum " beloved of the American press.

Dr. Larson's own method is a combined record of heart-rate, blood-pressure and respiration, obtained during the questioning of a suspect. The instrument is convenient, and Dr. Larson presents ample evidence of its physiological reliability. There are many brief case-reports with ample illustrations of instrumental records, providing evidence of attempted deception. Whether any negative records were obtained from subjects whose guilt was subsequently proved is not quite clear, nor is it possible to determine which, if any, exaggeration of the physiological variations occurring during fear may be due to the suggestive effect of the instrumental technique.

The records are not admissible as evidence in court, the method being intended for use in obtaining leads for subsequent police examination of the suspect ; wherefore, considering what is stated in earlier chapters of the book as to the nature of American police examinations, one is left with the impression that certain variables may enter into this experiment which cannot be recorded upon a revolving drum.

Despite these and other difficulties, the method is an undoubted advance on any of its predecessors, and reports of Dr. Larson's further results will be awaited with interest. C. J. C. EARL.

Nursing in Nervous Diseases. By JAMES W. MCCONNELL, M.D. Philadelphia : F. A. Davis Co., 1932. Pp. 153. Illustrated. Price $1.50.

This slender volume contains brief accounts of a number of disorders of the nervous system, with their nursing indications. Emphasis is laid throughout on the practical details making for the comfort of sufferers from the more chronic neurological conditions, and the valuable hints to be found in its pages make the book well worth perusal by the physician as well as by

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the nurse. As a text-book, however, it suffers from its restricted scope; and though the author disarms criticism to some extent by stating that the book merely embodies the substance of his own "conversational clinical lectures" to nurses, one wonders why such important conditions as disseminate sclerosis and encephalitis lethargica should have been omitted. The chapter on the anatomy of the nervous system consists of little more than an enumeration of the various structures, and does not present a clear picture of the nervous system as a whole; that entitled "Neuroses and Psychoses" is confused and vague in the extreme. A. WALK.

Human Sterilization. By J. H. LANDMAN. New York: Macmillan, 1932. Pp. 341. Price $4.00.

Sterilization may be performed for eugenic, therapeutic, punitive or contraceptive motives, and may be compulsory or voluntary. The author is concerned with compulsory legal sterilization for eugenic purposes.

He presents a history of the sexual sterilization movement in the United States. Over 12,000 people have been sterilized there in the last quarter of a century, as a result of legislation existing in 27 States, 7,500 of these in California, where the movement has had its greatest success. Of the total number, 46% were men and 54% women.

In men the operation performed is a vasectomy, or a bilateral ligation and excision of part of each seminal duct; in women, a bilateral salpingectomy, or removal of part of the Fallopian tubes. There is no evidence that either of these operations has any harmful effect on health or sex life. Vasectomy is a minor operation; salpingectomy a major one, which might well be replaced. Dickinson has succeeded in sterilizing women by electrically cauterizing the uterine ends of the Fallopian tubes, and as this operation may be performed without an anæsthetic, it promises to be useful. X-rays and hormones are also being experimented with.

Landman discusses the argument for and against sterilization and the present state of the American laws dealing with it, and has constructive suggestions of his own to offer. He suggests that each State should have a Department of Eugenics and Euthenics; euthenics, incidentally, is concerned with the improvement of the race through the environment. This Department is to guard the community against the procreation of socially undesirable progeny, and to help such undesirable types as have been born; it will ascertain those individuals who are "cacogenic" or unfit to reproduce; will institute proceedings against such individuals, so that they may be sterilized; it will also keep records of their pedigrees and of the post-operative results.

The State is to prosecute, and the Department will submit the expert testimony of eugenicists, sociologists, psychologists, physicians and psychiatrists. The defendant is to be provided with proper legal defence; and a jury of disinterested citizens is to determine the fact of his "cacogenicity". One shudders at the word "cacogenic", and hopes that it will not come into general use as a term of reproach.

With regard to the Californian experiment, it would have been of some interest had the author included the year-by-year statistics.

Like so many American books, this one is unnecessarily padded. There is no real need for detailed chapters on the classification of mental disorders

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and on the inheritance of mental disorders and mental deficiency. The attempt to make the book encyclopædic merely makes it diffuse, and at half its present size it would just as usefully serve its purpose.

As a competent presentation of the history of legalized sterilization in the U.S.A. it will, however, be found of value to those who are considering its use in this country. HENRY HARRIS.

An Introduction to Pneumatology. By JAMES CLARK MCKERROW, M.B. London: Longmans, Green & Co., 1932. Demy 8vo. Pp. 179. Price 6s. net.

The author is a mystic. We are informed that "pneumatology is the scientific study of religious experience". It is generally held that such study falls within the purview of psychology, but the author contends that this is not so. "Psychology has dispensed with the 'soul' . . . We may believe in the 'soul', however, in some sense without believing in it as substantial, just as we may believe in some peculiar relation between animal and environment, without believing in a 'conscious subject'. And we may believe in a relation between man and God, as factual as that between animal and environment. 'Religious experience' is as convenient a fiction as 'conscious experience', and our position, relatively to the view of the rationalist, for whom 'God' and the 'soul', in any sense, are vestiges of the primitive, theological stage of human thinking, is exactly analogous to that of the psychologist called upon by a behaviourist to justify his science". Nowhere in the book does the author attempt any proof for his views, and he appears to justify his position only by what we may call some sort of inner voice. As a consequence he is dogmatic in the extreme, but his style is relieved by paradox, epigram and antithesis, and often he is so facetious that one begins to wonder whether he is to be taken seriously. The earlier chapters are entertaining on that account, but the later are reminiscent of revivalist preaching. In theology "pneumatology" is the doctrine of the Holy Spirit, but in physics "pneumatology" is concerned with air, wind, gas. We wonder whether the author was conscious of this ambiguity when choosing the title of his book. A. WOHLGEMUTH.

Rééducation Psychothérapique. By P. PROST. Paris: O. Doin et Cie, 1932. Large crown 8vo. Pp. 138. Price 20 fcs.

This little manual is one of a series dealing with re-educational methods in various branches of medicine; other volumes in the series are on speech defects, deafness, faulty breathing, nasal obstruction, mental deficiency and motor defects in organic nervous diseases. There are obvious analogies between these various disorders and certain aspects of the psychoneuroses; and occupational therapy is an outstanding example of re-education applied to mental disorders in general. Re-education removes a superadded element of faulty functioning which may constitute nine-tenths of the patient's symptoms, but is no essential part of his psychic disturbance; the method is primarily for use in conjunction with a true causal therapy, though of course in the absence of such a therapy it may be the only treatment available.

Dr. Prost, however, appears to regard re-educational psychotherapy as

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synonymous with psychotherapy in general; at least he does not mention any condition in which some other mode of approach would be preferable. He devotes a large part of his book to a defence of psychotherapy, and another long section contains excellent clinical descriptions of a number of neurotic syndromes. This latter section is entitled " Méchanisme des Psychonévroses ", but the mechanisms described are merely those by which symptoms arise from other symptoms. The author studiously ignores any approach to the fundamental conflicts which are the motive forces behind these symptomatic sequences. This is well exemplified in the section on Anxiety, where he says:

" These disturbances are an exaggeration of the normal manifestations of legitimate fear. But, whereas a well-balanced individual spontaneously returns to muscular relaxation . . . as soon as the danger is over, the neuropath is no longer able to relax, and therefore lives in a state of perpetual fear ".

And he gives it as the aim of psychotherapy to bring about this relaxation. But surely the reason for the patient's inability to relax is that for him the danger is not over, but is, on the contrary, an ever-present one.

The actual technique of the author's methods includes a preliminary understanding with the patient, who must have a " sincere wish to get well ", as to the nature of his disorder and the aims to be pursued. This is followed by a careful case-taking, on cathartic lines, but not occupying more than one or two sessions. The main part of the treatment consists of a training in relaxation, brought about by means of suggestion and auto-suggestion, and followed by systematic exercises in observation, attention, manual and intellectual activities and an orderly planning of the patient's life. All this is set out in a somewhat sketchy form and one could wish for more practical details. The author states that a week's treatment will produce noticeable improvement, and convince the patient of the value of the method.

The book is well worth reading for the sake of the truth of its clinical observations, and as an account of a therapy of wide applicability as an adjunct and, if need be, a substitute for more fundamental and radical methods.

A. WALK.

I Lost my Memory: The Case as the Patient saw it. London: Faber & Faber, Ltd., 1932. Pp. 304. Price 7*s.* 6*d.* net.

The Maniac: A Realistic Study of Madness. Second edition. London: Watts & Co., 1932. Pp. 259. Price 7*s.* 6*d.* net.

The patient who lost his memory was a man of high scientific attainments, who had been forced to terminate his career, and was endeavouring, so far unsuccessfully, to build up a new one. As a reaction to his intolerable sense of frustration there occurred a fugue, which left him with an amnesia covering a period of twenty years. He received psychotherapeutic treatment, and his " lost territory " was ultimately reconquered, not at one dramatic stroke, but by successive advances, to which his own and his wife's untiring efforts also contributed. He sets out his experiences in a most attractive form, giving first his impressions as a re-awakened Rip van Winkle, and later his outlook as a co-operative patient with a great deal of insight. He was much helped by psychological concepts of his own evolving; and he gives an excellent clinical description of the state of " pathological boredom " which for long held up

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progress. He describes his physician with affectionate regard, and the latter contributes a sympathetic preface; readers may perhaps hazard a guess at his identity.

The Maniac, now re-issued twenty-three years after its first publication, is as lurid and sensational and as dubious in origin as *I Lost My Memory* is sober, straightforward and authentic. It is almost impossible to identify the form of mental disorder it purports to describe.

The author claims an altogether incredible accuracy of recollection of her hallucinations; and these seem to have reached a degree of dramatic elaboration far beyond what is seen in the great majority of patients. The patient was never certified, but was attended by a "nerve specialist", who is described as particularly tactless and uncomprehending. The book is interesting mainly from the point of view of the author's psychology apart from her acute breakdown. As such one feels that it has a certain value, for the author's style, her eagerness to apply her own experiences to the whole field of insanity and her hasty conclusions and theorizing are psychological facts—just as much raw material to the psychiatrist as are the alleged symptoms described with such a wealth of detail.

A. WALK.

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Part III.—Epitome of Current Literature.

1. Anatomy and Physiology.

Action Currents in the Central Nervous System. (*Arch. of Neur. and Psychiat., vol. xxix, Feb.*, 1933.) *Saul, L. J., and Davis, H.*

The authors studied the action currents in the appropriate tracts after a sense-organ had been stimulated. Responses were obtained from the proprioceptive, tactile, auditory and optic pathways. "Spontaneously" discharging points in the brain were found. Two electrical effects were found in the acoustic mechanism—true action currents and "spread". The latter is an electrical disturbance spreading in all directions; it is probably involved in the transformation by the cochlea of sound into nerve impulses, and has nothing to do with the transmission of impulses from the ear to the brain. The auditory action currents are highly localized in the auditory pathways, are reversibly deleted by anæsthetics, and disappear immediately on the death of the animal. The "spread" broadcasts through all the tissues of the head, is extremely resistant to anæsthetics, and may persist for as long as twenty minutes after the heart stops, or after the eighth nerve and cochlear artery are cut. It reproduces words accurately, which the auditory action currents do not do. It is distinguished from the action currents by the different shapes of the waves on the cathode ray oscillograph, by its size in relation to strength of stimulus varying in more of a straight line than a logarithmic curve relationship, and by its almost instantaneous transmission through tissues, in contrast to the relatively slow speed of action currents. Electrodes placed on the optic tract between chiasma and lateral geniculate body provide such a sensitive preparation that in a diffuse light a foot from the cat's eyes the amount of movement necessary to pinch a small forceps stimulates the retina to produce action currents enough in the optic tract to give a definite response on the oscillograph and in the loud speaker.

G. W. T. H. Fleming.

A Note Concerning the Relation of the Frontal Lobes to Posture and Forced Grasping in Monkeys. (*Brain, vol. lv, Dec.*, 1932.) *Fulton, J. F., Jacobsen, C. F., and Kennard, M. A.*

The authors describe in monkeys the effects on posture and on the production of the phenomenon of forced grasping of sharply circumscribed anatomical lesions of the following three areas, both separately and in various combinations:

(1) The true frontal area.
(2) The premotor area.
(3) The motor area.

Simultaneous bilateral destruction of the true frontal area has no effect on posture. It does, however, cause a characteristic syndrome, marked by greatly increased spontaneous motor activity with an associated augmentation of appetite. Simultaneous bilateral extirpation of both frontal areas together with the premotor areas caused forced grasping, perseveration and slowness in initiating responses, but no hypertonia, and the postural disturbances which result are primarily those associated with the phenomena of perseveration and forced grasping and groping.

Lesions restricted to the excitable motor area cause flaccid paresis without forced grasping in all primates above the lemurs.

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Simultaneous extirpation of the motor and premotor areas causes a less flaccid paresis, with the appearance, after an interval, of forced grasping.

Richter and Hines have shown that isolated destruction of the whole premotor area on one side causes forced grasping on the opposite side in *Macacus rhesus*. This observation the authors confirmed in *Lasiopyga callitrichus*.

G. W. T. H. FLEMING.

Conditioned Reflexes [*Les réflexes conditionnels*]. (*L'Encéph., 27th year, No. 9, Nov., 1932, p. 786.*) *Meignant.*

This is a review and an *exposé* of the work on conditioned reflexes which has been translated into French by Trifonov. (This service has been done for English by Gannt of Johns Hopkins.) Meignant mentions the enormous and increasingly complicated data of reflexology and points out that the study is approaching a stage where it will become more readily formulable into an explanation of psychological phenomena. The article contains little beyond a capable review of the facts in the study of conditioned reflexes. A second section is to appear later.

W. McC. HARROWES.

The Regulation of Cortical Functions: the Mesencephalon [*Sur la régulation des fonctions corticales*]. (*L'Encéph., 27th year, No. 9, Nov., 1932, p. 757.*) *L'Hermitte.*

After philosophical considerations on the brain as the organ of mind, the author proceeds to consider the effects of decortication in animals, and the syndrome present in anencephalic infants. He then passes to the logical demand for some mechanism regulating and controlling the complicated activity of the higher centres. He quotes Hascovec (Prague), who strongly insisted on the existence of such a centre, and who, in addition, demonstrated that it should lie in the mid-brain. Kinnier Wilson's demonstration of hepato-lenticular degeneration first showed a psychological and a motility disturbance as a result of a definite lesion. There follows a recapitulation of the many and various personality changes in chronic encephalitis lethargica. Here the author points out that in all the many syndromes of striate disease there is no correlation between the lesion and any psychological disturbance. He states that disturbances of the basal ganglia alone cannot produce psychological symptoms, and goes on to ask if this is true of lesions of the infra-striate region around the third ventricle.

He then quotes a number of encephalitic cases of mid-brain type which showed a particular type of visual hallucinations, with complete realization that the visions were, in fact, without object.

A detailed discussion of the points for and against the mid-brain as a control centre follows. The question of cerebral inhibition is approached from the point of view of Pavlov. The question then arises as to the mechanism which activates the mid-brain. This is supposed to be chemical, and to have existence as a hormone produced by the hypophysis.

W. McC. HARROWES.

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2. Psychology and Psycho-Pathology.

The Nature of Emotion. (*Journ. of Abnorm. and Soc. Psychol., vol. xxvii, Oct.-Dec., 1932.*) *Drever, J.*

The author reviews McDougall's well-known views on the relation between instinct and emotion. He points out that most emotions display what he calls bipolarity, *i.e.*, when the flight impulse is facilitated instead of being thwarted, an emotion called "relief" is experienced. Drever would call the elementary feeling aroused by an instinctive impulse, interest. As the impulse is thwarted, the response becomes increasingly protopathic, there is emotional dissociation, and we experience emotion of a "sorrow" polarity. If facilitated, the swing is

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towards the " joy " polarity. Emotion is not a definite and simple psychological entity. It is a phase of response and of experience. We should not speak of " an emotion ". We should speak of emotional response and emotional excitement. G. W. T. H. FLEMING.

Present-Day Theories of Intellectual Factors (General, Group and Specific). (*Journ. of Educ. Psychol., vol. iii, Feb.*, 1933.) *Jones, Ll. W.*

The author reviews the theory of two factors, and discusses the views of Thorndike, Thomson and Kelley on this theory. He points out that the tetrad difference technique is now generally regarded as an essential method for investigating the relations between mental abilities. G. W. T. H. FLEMING.

Further Studies on the Memory Factor. (*Arch. of Psychol., No. 142, Aug.*, 1932.) *Anastasi, A.*

The author concludes that it is not possible to speak of a single common factor running through all forms of memory. The reasons for the possibility of common factors would appear to be the use of common materials and of special techniques. Community of material certainly seems to lend support to the apparent presence of a common factor. The effect of special techniques is shown by the relatively high correlation form between tonal memory and memory for movement, both tests involving a very immediate sort of memory for short series of discrete impressions, making possible the use of various common devices.

G. W. T. H. FLEMING.

The Instinct Hypothesis versus *the Maturation Hypothesis.* (*Psychol. Rev., vol. xl, Jan.*, 1933.) *Witty, P. A., and Lehman, H. C.*

The authors discuss the relative schools of instinct and maturation, a term which Allport defines as follows: " It is . . . theoretically admissible that traits of behaviour which make their first appearance during infancy, childhood or youth may result from the " ripening " or maturing of truly innate co-ordinations of reflexes, and not from experience. We may call this the maturation hypothesis ".

The authors find that the term " maturation " is proving just as obscure as the term " instinct " was. In some cases the use of the word " maturation " suggests the phenomenon that once was labelled " delayed instinct." Their advice is " wait and see ". G. W. T. H. FLEMING.

The Child and its Activity with Practical Material. (*Journ. of Educ. Psychol., vol. iii, Feb.*, 1933.) *Buhler, C.*

The author continues experiments she has previously published. She finds that by the time a child has reached school age it is capable of producing definite results with practical material, and has ceased to use objects merely for purposes of make-believe. The child of school age wants to construct things, and therefore is on the look-out for scraps of material of all sorts; its interests are practical. The tendencies to collect and to construct reach a climax at the age of 11 years. Children brought up in an institution where they have little access to materials for creative work are apt to be retarded intellectually.

Persistence with one type of work, with the consequent mastery of technique, produces a feeling of stability and of a place in the social order which is lacking in children who have not had this training. G. W. T. H. FLEMING.

The Relationship of Psychological Tests in the First Grade to School Progress. (*Psychological Clinic, vol. xxi, Sept.–Nov.*, 1932.) *Richards, T. W.*

An attempt was made to follow up 416 children who had been given psychological tests in the first grade, data being obtained for 78% of the cases. There is a positive relationship between the Stanford-Binet I.Q. and school progress, as well as between memory spans and school progress. There is no such relationship between performance tests and school progress. M. HAMBLIN SMITH.

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A Statistical Study of the Responses of a Group of Normal Children to the Individual Tests in the Stanford Scale. (*Psychological Clinic, vol. xxi, Sept.-Nov.*, 1932.) *Skalet, M.*

Many of the individual tests in the Stanford-Binet scale appear to be of unequal difficulty when compared with other tests in the same year level. Some are too complex and others too simple. This shows the necessity for a careful analysis of successes and failures in the individual tests. Those tests which involve spontaneous interest in numbers and time and geometrical form are relatively more difficult for all the children, and comprehending situations are easier than the tests of other types in the same year-group. The I.Q. alone is insufficient as a description of a child's mental status. M. HAMBLIN SMITH.

An Appraisal of Pavlov's Systematization of Behaviour from the Experimental Standpoint. (*Journ. Comp. Psychol., vol. xv, Feb.*, 1933.) *Lencke, R. B.*

Pavlov's principle of cortical irradiation is the focal point of his systematization of behaviour. Six studies from his own laboratory are analysed and are found to oppose the fundamental assumption of his theory. It is maintained that Pavlov's explanatory formulation of sleep, of learning, of neuroses—his entire system of behaviour—lacks experimental verification. M. HAMBLIN SMITH.

Cerebral Control in Maze Learning of Rats. (*Journ. Comp. Psychol., vol. xv, Feb.*, 1933.) *Honzik, C. H.*

There is some intra-neural mechanism capable of producing an integrated sequence of movements in the absence of directive sensory clues, either peripheral or intra-organismic. We should consider behaviour of this kind in humans to be directed by thought or ideation, and we may, therefore, be said to have demonstrated the rudiments of a capacity for rational behaviour in the rat.
M. HAMBLIN SMITH.

The Emotion of Disgust in Dogs. (*Journ. Comp. Psychol., vol. xiv, Dec.*, 1932.) *Maslow, A. H.*

Dog meat was refused, upon first presentation, by 87% of a group of 15 dogs. There is no evidence for disgust being the cause of rejection. The "emotion of disgust" in the dog is still unproven. M. HAMBLIN SMITH.

Cannibalism in Dogs. (*Journ. Comp. Psychol., vol. xiv, Dec.*, 1932.) *Girden, E. S.*

The aversion to dog meat is not universal, and may be removed by cooking. A considerable degree of hunger removes the aversion permanently.
M. HAMBLIN SMITH.

The Amount of Motility of Seventy-three Newborn Infants. (*Journ. Comp. Psychol., vol. xiv, Dec.*, 1932.) *Irwin, O. C.*

Striking individual differences are present soon after birth. A marked increase in activity appears about the fourth day. Motility is about six times greater during waking than during sleeping. M. HAMBLIN SMITH.

The Distribution of the Amount of Motility in Young Infants between Two Nursing Periods. (*Journ. Comp. Psychol., vol. xiv, Dec.*, 1932.) *Irwin, O. C.*

In the majority of cases infants are more active before than after feeding. This suggests that hunger is a primary causal factor. M. HAMBLIN SMITH.

The Neurological Interpretation of Idiopathic Inattention in Children. (*L'Hyg. Ment., 27th year, No. 8, Sept.-Oct.*, 1932, *p.* 217.) *Robin.*

The children examined were all normally endowed with intelligence. The following causes of inattention were found: Psychological—lack of interest, a

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dominant interest, obsession, excitement (*états maniaques*), schizoid day-dreaming, emotional scattering in the emotionally unstable ; biological—instability of choreic subjects, dulling due to epilepsy, aprosexia from respiratory disorder, irregular neurological development in constitutionally inferior types. The author gives interesting case-studies. It is his thesis that these attention disorders are evolutionary, and that all forms of concrete activity tend to improve the ability to focus the thinking steadily on some object. He ends by stating interestingly that attention is but a gesture, and that thought, the real mental type of activity, follows it. It is a clear exposition of the school of psychologists, who feel that attention is almost purely a motor phenomenon. W. McC. HARROWES.

A Study of the Growth of Language between Two and Four Years. (*Journ. of Juv. Research, vol. xvi, Oct.* 4, 1932.) *Adams, S.*

The data used were the vocal reactions of children during free play activity in the nursery school of the Institute of Child Welfare, University of California. A research assistant was assigned to each child and complete records obtained. The statistics indicate that the greater number of the language categories show the presence of measurable " traits ". The paper is in the nature of a preliminary study and the basis for further investigation is outlined. C. J. C. EARL.

A Study of Height, Weight and Age among High-School Boys. (*Journ. of Juv. Research, vol. xvi, Oct.*, 1932.) *Bissett, L., and Laslett, H. R.*

The study was made in 1,850 high-school boys in California over a period of five years. The subjects' ages ranged from 13 to 20 years.

The relationship between intelligence and weight, and between intelligence and height, was calculated for a group of 540 boys, intelligence being determined by a group test on school entry. The study is statistical, and psychological details are omitted.

The authors conclude that the overlapping among the groups is very marked. In general only a pupil who deviates from the mean for his age by two or more standard deviations should be classed as extreme—that is, sufficiently abnormal to cause any serious concern. The period of greatest annual growth in both height and weight was the 14th year.

The correlation between height and intelligence was $-\cdot185 \pm \cdot0283$, and between weight and intelligence $-\cdot41 \pm \cdot0244$. C. J. C. EARL.

Some Factors Relative to Adjusted and Unadjusted Personalities. (*Journ. of Juv. Research, vol. xvi, Oct.*, 1932.) *Lester, O. P., and Bennette, W. L.*

A group of 95 women students was given the Thurston personality schedule (some 223 questions).

The highest and lowest quantities were taken as the adjusted and unadjusted personality groups respectively. The groups were further investigated to obtain information on environmental and other factors aiding the development of unadjusted personalities.

Abnormal emotional attitudes to parents and others, unhappy childhood and sex preoccupation are commoner in the unadjusted group, whilst racially the group contains a higher percentage of Jews than of Gentiles.

The paper is presented as a preliminary study, and further work is to be done. C. J. C. EARL.

Terminology in re " *Psycho-galvanic Reflex* ". (*Psychol. Rev., vol. xl, Jan.*, 1933.) *Ruckmick, C. A.*

The author points out that the term " psycho-galvanic reflex " is not desirable, as it is not a reflex, is not necessarily psychical, and the word " galvanic " is obsolete. He suggests the term " electrical dermal response " as being much more accurate,

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and as connoting (1) changes in the electrical resistance of the skin to externally applied currents, due to a variety of physiological phenomena under the control of the autonomic nervous system following sensory or ideational stimulation, usually with affective concomitants. This term also connotes (2) changes in the electrical potential of the skin due to the same conditions as in (1).

G. W. T. H. FLEMING.

The Psycho-galvanic Reactivity in Affective Disorders. (*Brit. Journ. Med. Psych., vol. xii*, 1932.) *Ödegaard, Örnulv.*

In a previous paper this author has described a new method of analysing the psycho-galvanic reactivity based on 558 curves. The present paper is a continuation of this work, and gives a detailed study of 127 psycho-galvanic curves from 121 patients diagnosed as suffering from some type of depression or neurosis. The work was carried out at the Henry Phipps Psychiatric Clinic. None of the patients were examined personally, but full reliance was placed on the documented clinical history. The author points out that the psycho-galvanic reflex has been used as an amplification of the association experiment to determine the emotional attitude to special stimuli, the time and amplitude being clearly marked in this type of reaction. If the curve is taken as a whole it can be regarded as an expression of the vegetative-emotional reactivity. The psycho-galvanic reactivity is regarded as being due to the interaction of two components, one (negative) due to increased potential of the palm of the hand, the other (positive) due to increased potential of the back of the hand. It is found that there is most disturbance of the curve in cases of mania and schizophrenia and least disturbance in cases of hysteria. It is said by the author that clinical improvement in the mental state of the patient is accompanied by a definite return of the psycho-galvanic reactivity towards normal.

F. H. HEALEY.

A Psycho-Physiological Explanation of the so-called Human "Aura". (*Brit. Journ. Med. Psych., vol. xii*, 1932.) *Fraser-Harris, D. F.*

The "aura" is the technical name for an emanation of something not of the nature of ordinary matter which surrounds or envelops the human body. (It has no relation to the "aura" which is the subjective impression, *e.g.*, of a breeze passing over the body just before an epileptic fit.) Methods of observing this human "aura" are described, and the phenomenon is explained on the principle of negative after-images produced by retino-cerebral induction. A summary is given of a treatise on this subject by W. J. Kilner. The author concludes that the "aura" is neither an illusion nor a hallucination, but is a subjective sensation corresponding to a transitory physiological stimulation of the retina.

F. H. HEALEY.

The Psychological Factor in Migraine. (*Brit. Journ. Med. Psych., vol. xii*, 1932.) *Weber, Hilda.*

It is obvious from a survey of the literature that there is much difference of opinion as to the exact ætiological significance of the psychological factor in migraine. Crookshank favours a psychological approach to migraine, whereas Collier stresses the physiological approach. It is pointed out by the author that migraine, as usually described, is a condition in which there are no observable abnormal physical signs. This paper describes a case of migraine, with an account of the life-style of the patient, and an attempt is made to explain the rationale of the migrainous attacks. Psycho-therapeutic treatment was given, and from a lessening of the symptoms it is argued that the case had mainly a psychological basis. In the author's opinion the psychological factor plays a *rôle* of considerable importance in the ætiology of some cases of migraine; but there is still left the problem of the part played by somatic factors, and it is not possible to come to a definite conclusion by a study of one case.

F. H. HEALEY.

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Pre-Human Psychic Evolution : A Hypothetical Theory of the Psychological Evolution of Our Species in Pre-Glacial, Glacial and Early Post-Glacial Epochs. (*Brit. Journ. Med. Psych., vol. xii,* 1932.) *Daly, C. D.*

This article is an imaginative attempt to understand something of our psychic evolution in the dark ages which preceded the so-called human era. It is founded on a study of natural history, mythology, folk-lore and anthropology, aided by the interpretative methods of psycho-analysis. F. H. HEALEY.

The Mother : Agent or Object. (*Brit. Journ. Med. Psych., vol. xii,* 1932.) *Suttie, Ian D., and Suttie, Jane I.*

Paper I.

In this paper attention is called to the background forces of psycho-pathology, the authors feeling that these factors are not so constant as had been thought. Psychopathology is defined as a study of the forces and mechanisms by which instinct is deprived of its natural objective. The Œdipus complex is thoroughly discussed, and doubt is thrown on the Freudian outlook of the major importance of paternal repression. The suggestion is made that the maternal rejection is a much more effective repressant than the mere paternal castration threat of the earlier Freudian exposition. Great stress is laid on the obvious fact that the infant approaches the world through the mother's senses, and the authors therefore contend that the mother's will is the main controlling factor in the child's early development. It is said that Freud's patriarchal repression accounts for the neuroses, while maternal repression accounts for mental health. It is pointed out that Freud is a product of intense patriarchal culture, and hence discovered patriarchal repression easily. Under patriarchal conditions, the mother allows the child to perceive the father as the chief obstacle to the exclusive possession of herself. The typical Œdipus setting is established on the weak foundation of paternal repression. Patriarchal and matriarchal cultures are next discussed and contrasted, and the mythology of the Œdipus situation is recalled. The mother-child relationship is fully described, and it is said that in abnormalities of this development are to be found the clue to the psychoses, as in the Œdipus principle Freud has found the main explanation of the neuroses. It is further shown that in human infancy instinct is melted down into a formless attachment to the mother, to be directed later upon the outer world under the stimulus of her interests and guided by her experience. The total diffused instinct mass is focused on the mother, and is largely at her disposal. She can keep it fixed upon herself until it specializes itself as personal interest and sexual desire. She can repel it so that the infant loses the confidence it should have, or she can so direct this plastic interest that the child is brought into the most friendly terms with reality. Thus the mother is more agent than object, and is the guide to the child's psychological development.

Paper II.

In this second paper Freud's conception of a death instinct is discussed, and evidence adduced to disprove it. Also the social and reproductive instincts for man and the higher animals are discounted. Instead of a social instinct, a "co-operative dependency" arising as a further development of the mother-child relationship is postulated as the essence of social life. The so-called reproductive instinct is shown to be exceedingly composite, and so is rejected. The parental instinct is analysed and also rejected. The authors maintain that the principal factor in the development of parental feelings is the need for association, which is the vestige of the infantile dependency on the mother. All the instincts are reduced to the mother-child relationship, and one instinct stem replaces a number of relatively independent instincts. As the function of this one instinct stem is mainly self-preservative, this is the name applied to it.

The authors point out that the course of development dictated by evolution

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imposes on the highest organisms the necessity of making a number of difficult adaptations, which are more exacting and enforced earlier in the highest cultures. The path from infancy to childhood and so to adult life is difficult, and calls for renunciation of the mother and acceptance of a substitute for her. It is necessary to keep substitution on a level with privation, so that the associative impulse shall develop without serious hitch from infancy to social life, to mateship, and so to parenthood.

In family life certain stresses appear. With the evolution of mammalian reproduction the father tends to get displaced. The child expands and fills the mother's affective life ; its advent contracts the father's affective life, and in so far as he has not grown out of the need for a mother, he will re-suffer the trauma of being supplanted by a younger child. Thus there is a comparison between the love situation of the jealous father and the supplanted elder child.

The Freudian investigator has been mainly occupied with sex interest and its thwartings. The present authors regard the food interest, giving and receiving as quite as authentic and primordial as sex, and as even more closely bound up with and contributing to the associative impulse, the aberrations of which give rise to most of the problems of the psychoses. Thus dementia præcox is essentially a regression to a solipsistic reunion with the mother, and melancholia represents a reinstatement of the infant's despair at an imagined maternal rejection and refusal of love.

The Adlerian conception that all human effort is a striving for significance is discussed and criticized. Individual psychology is said to be vague and hazy, and to make artificial and false generalizations. In an appendix reference is made to Freud's recent paper, " Female Sexuality ". The authors think it meets some of their criticisms, but they regret that Freud still clings to the sexual as opposed to the food-associative interpretation of society. There is agreement with Freud in abandoning the Œdipus complex as the main explanation of the neuroses.

F. H. Healey.

Common Problems in Psycho-Analysis and Anthropology, Drug Ritual and Addiction. (*Brit. Journ. Med. Psychol., vol. xii*, 1932.) *Glover, Edward.*

It is pointed out that anthropology and psycho-analysis are sciences with much in common, and yet they have remained for a long time considerably separated. The author notes that an attempt was made to fuse the two sciences in a paper read by Ernest Jones to the Royal Institute of Anthropology in 1932.

In the first part of the present paper the author discusses the psychological problems of drug addiction, and describes his attempts to get help from anthropological literature. It was found that the most advanced tendencies of anthropological research are in the direction of a functional approach to the primitive social organization. The author searched Dr. Fortune's book, *The Sorcerers of Dobu*, for evidence on drug problems, but found nothing from the psycho-analytical standpoint which could not be inferred from phenomenological studies of the primitive. The chapter headings were translated into the terms of psycho-analytical psychology and a remarkable distribution of interest was found. The analytic technique was discussed, and it is shown how the analyst draws up a psychological balance-sheet. For the purposes of effective communication between the sciences of anthropology and psycho-analysis, the anthropological functional methods should be made to approximate more closely to the balance-sheet of psycho-analysis. Field workers in anthropology who are sympathetic to the views of applied psycho-analysis should themselves undertake a personal analysis. In the appendix are given answers to a series of questions promulgated by Dr. Evans Pritchard, which focus a discussion on the relations of psycho-analysis and anthropology. It is suggested that the least requirements of an analytical anthropologist should be a thorough appreciation of symbolism and dream interpretation, an understanding of play technique in child analysis, and a training in the systematic observation of the psychoses.

F. H. Healey.

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Telepathy in a Dream. (*Psycho-Anal. Quart., vol. i, July,* 1932.) *Róheim, Géza.*

Investigation of a telepathic dream in a girl suffering from anxiety hysteria led to the conclusion that ideas centred about telepathic or magical influence are directly evolved from the substitute gratification (auto-erotic) experienced by the child in the primal scene situation. STANLEY M. COLEMAN.

Jealousy as a Mechanism of Defence. (*Int. Journ. of Psycho-Anal., Oct.,* 1932.) *Riviere, Joan.*

Moods of persecutory jealousy in a young woman were found on analysis to be a condensed and rationalized projection of her dominating phantasy; this consisted of an impulse or an act on the patient's part of robbing and despoiling some other person of something she greatly desired. STANLEY M. COLEMAN.

Iphigenia in Tauris [*Iphigenie auf Tauris*]. (*Internat. Zeits. f. Individpsychol., Sept.-Oct.,* 1932.) *Furtmüller, C.*

The author claims Goethe as an exponent of the tenets of individual psychology, and takes the poet's dramatic poem, "Iphigenie auf Tauris", to illustrate this thesis. Iphigenia is considered as hesitating at first between her proper feminine *rôle* and her masculine protest, and as finally resolving this conflict in the heroic decision to tell the king the truth about herself, her family, etc. She thus transcends selfish purposes for the goal of the common good—for the social instead of the personal objective—thus clearly acting on the principles of individual psychology. JANE I. SUTTIE.

The Love-Choice [*Über Liebeswahl*]. (*Internat. Zeits. f. Individpsychol., Sept.-Oct.,* 1932.) *Dreikurs, R.*

Discusses whether human instinct can really be equated with the biologically determined instinctual behaviour of animals. The capacity to refrain, *withdraw* from, instinctual action, is, along with consciousness, characteristic of man. This must complicate any conception of, for instance, the love relationship in human beings. The "love-choice" of any individual really illustrates his characteristic solution of the "*love-task*"; thus it cannot be understood as due to either purely *sexual* or purely *erotic* feeling. Man experiences hunger and love like any animal, but what he makes of these instincts, how he responds to them, depends on the psycho-spiritual make-up of the individual personality. Appetite—a markedly human character—can now appear or disappear in *the service of the personal goal.* Should the term "instinct" be applied to both man and animals?

A great variety of neurotic love patterns are discussed, all illustrating mistaken life-styles of one type or another. The author concludes that as it is never pleasant to have to acknowledge personal goals of which one is ashamed, a school of thought that represents man as made up of *instincts* will always find more immediate support than one that seeks out the *goal* in all behaviour. JANE I. SUTTIE.

Observations on Twins [*Über Zwillingsbeobachtungen*]. (*Internat. Zeits. f. Individpsychol., Sept.-Oct.,* 1932.) *Orgler, A.*

The author concludes from the study of behaviour in over a hundred pairs of twins that, while inherited tendencies play an important part in human development, yet they are not decisive factors, and that environmental influence plays at least as great, if not a greater, part. JANE I. SUTTIE.

The Precocious Child [*Das Frühreife Kind*]. (*Internat. Zeits. f. Individpsychol., Sept.-Oct.,* 1932.) *Schairer, J. B.*

The apparently precocious—sexually mature—girl of 13–15 is rarely really mature. Such sexual precocity is more usually an evidence of an arrested rather than an accelerated development. The precipitate plunge into sexual activities is more often a talion reaction against real (or fancied) neglect or aggression, of

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one kind or another, on the part of the environment. Several cases are discussed. The conclusions to be drawn are that the sexual sphere cannot be regarded as an independent one, to be considered only from the point of view of procreation and pleasure gratification. Parents are much to blame if they let a girl's instinct of retaliation get on to wrong lines, and the strength of this instinct should be noted and respected. Finally the destruction of the real family community, so common in urban life, is greatly to be deplored. JANE I. SUTTIE.

Crime and Neurosis [Verbrechen und Neurose]. (Internat. Zeits. f. Individpsychol., Sept.-Oct., 1932.) Brandhuber-Etschfeld, F.

The need to dominate, the will to power, are frequent motivations for crime, and are also characteristic of the neurotic. The typically neurotic crimes are those against property and the bodily security of others. All criminals fail in any appreciation of the social order, of the community, of the duty of the individual towards the latter. JANE I. SUTTIE.

Intuitional Psychology and Individual Psychology [Verstehende Psychologie und Individualpsychologie]. (Internat. Zeits. f. Individpsychol., Sept.-Oct., 1932.) Seelbach, H.

The second part of a comparative study of the psychological orientations of Dilthey, Jaspers and Spranger with Alfred Adler's Individual Psychology.
JANE I. SUTTIE.

The Structure of the Neuroses [Der Aufbau der Neurose]. (Internat. Zeits. f. Individpsychol., Sept.-Oct., 1932.) Adler, A.

An extremely condensed statement of the essential tenets of individual psychology as applied to and illustrating the structure of the neuroses. The striving—actually movement—towards a goal is universally present in life. The mere possession of an "instinct" or "tendency" (*Anlage*) means little; it is the *use* made of it that matters. All childish endeavour strives towards some kind of domination, and the particular goal of this striving is determined by *the creative drive in the child itself*. This drive is the internal, subjective factor in determining the life-style; a second, external factor is that of being spoilt. Spoiling here does not mean kissing and petting, but that the mother turns life into a symbiosis for the child, and the child itself into a parasite. A third factor, also external, is neglect of the child. Every spoilt child automatically reaches a situation where it feels neglected.

The neuroses and psychoses are linked by one common thread—that of an uncertain attitude to life and a failure in the capacity for social co-operation. The neurotic lacks social interest, he exploits the social feeling of others, and withholds his own co-operation behind a "but" characteristic of all neurotic symptoms. The neurotic motto is, "Yes—but!" All neuroses arise from the psychic tension in a socially ill-prepared individual faced with a task that demands more social feeling than he possesses. JANE I. SUTTIE.

Infantile Psycho-analysis and its Rôle *in Mental Hygiene. (L'Hyg. Ment., 27th year, No. 8, Sept.-Oct., 1932, p. 227.) Heuyer and Morgenstern.*

This is an account of the *rôle* and value of psycho-analysis in the functioning of a child-guidance clinic. There seems to be some line drawn between the more purely characterological disorders and the troubles due more definitely to familial and environmental maladjustments. It is noteworthy to what extent the analyst is consciously indebted to data collected by social service. A note is made of the ease of child analysis and of the commoner features of the material. Stress is laid on the inevitable dysharmony in the home, so familiar to all child-guidance workers. The therapy of the clinic is directed to special types of play in which the symbolic modelling trends of children are taken advantage of to express and to

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modify complex material. The authors point out that the sexual basis of many child disorders is obvious, and that by analysis the individual is not only helped over the present difficulty, but also set on the right lines for life. Mention is made of the poor sublimative power of children—an obvious corollary to the ease of analysis which supposes a relative paucity of material, and of the significance of the transference. W. McC. HARROWES.

A New Theory and Therapy of the Will. (*Journ. of Abnorm. and Soc. Psychol., vol. xxvii, April–June,* 1932.) *Moxon, C.*

The author discusses Rank's contribution to analytic theory. He points out that Freud's theories are too destructive, and that his method of dream-interpretation fails to concentrate the attention of the therapist on the conflict in the present. Rank has brought the will back to psychology, and shows that the psychological training of the will can best be achieved in a controlled situation when the student's will can show itself in relation to the will of the therapist. Rank's work is free from the sexualization of the human conflict found in Freud's work, and the over-emphasis on the will to power that dominates Adler's views.

G. W. T. H. FLEMING.

Students' Reaction to Abnormal Psychology. (*Journ. of Abnorm. and Soc. Psychol., vol. xxvii, April–June,* 1932.) *Taylor, W. S.*

The author sent out *questionnaires* to 125 students of abnormal psychology, of these 62% were returned; 42% thought their wholesome outlook on life would be strengthened, and 54% thought it would really be reinforced. It is not possible to give any statistics as to why the remaining 38% did not reply.

G. W. T. H. FLEMING.

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3. Psychiatry.

Deletion of Function and Adaptive Compromise. (*Amer. Journ. Psychiat., vol. xii, Nov.,* 1932.) *Gregg, D.*

We deal, in psychiatry, most commonly with conditions in which a deletion of brain function is the important factor. We must try to increase our power to discriminate between deletion due to organic defect or destruction, and temporary deletion due to temporary noxious agents. Cases should be investigated in terms of modification of function, for effective therapeutic adjustment often turns on this factor rather than on immediate conduct disorder.

M. HAMBLIN SMITH.

The So-called Law of Anticipation in Mental Disease. (*Journ. of Neurol. and Psychopathol., vol. xiii, Jan.,* 1933.) *Paterson, A. S.*

The author investigates Mott's conclusions, and adds further material since 1911, when Mott's work was published. He finds that the onset of mental disease in each succeeding generation of a tainted stock at an earlier age and in a more intense form, so far from being the rule, is exceedingly difficult to demonstrate in any pedigree, and that where it does occur, it probably depends on a combination of Mendelian factors. G. W. T. H. FLEMING.

Erethizophrenia and Kolyphrenia. (*Amer. Journ. Psychiat., vol. xii, Nov.,* 1932.) *Hunt, J. R.*

The cerebral cortex is subject to the same laws of excitation and inhibition as are the lower centres. There is evidence to support the theory of specific excitatory and inhibitory cells in the central nervous system harmonizing with the existence of such a dual mechanism in the vegetative system. We can recognize two fundamental psychological types, an erethitic and a kolytic, due to a predominance of

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one or other of these functions in the psychic field. Exaggerated states of cortical excitation and inhibition are responsible for many of the well-known disorders of psychic function. A state of exaggerated mental excitability may be termed "erethizophrenia", and one of exaggerated inhibitability may be termed "kolyphrenia". It still remains to be decided whether the differences depend upon a predominance of specific cells, or to endocrine imbalance, or to metabolic activities of the cells themselves. M. HAMBLIN SMITH.

The Potentiality for Change in Personality. (*Amer. Journ. Psychiat., vol. xii, Nov.,* 1932.) *Kahn, E., and Cohen, L. H.*

Neither the genetic nor the environmental factors can be neglected. The psychotherapist often attempts to force the patient to certain goals which are not within the capabilities of the patient. The inherited potentialities are limited in their capacities for development. There is some sort of constitutional change-ability in every person, that is, an *anlage*-conditioned special factor of potentiality for change. This must be critically estimated by the psychotherapist. On this basis it may be decided whether, and to what extent the individual, may profit by changed environmental conditions. M. HAMBLIN SMITH.

School Maladjustments of Some Mentally Superior Patients in a Psychiatric Clinic. (*Psychological Clinic, vol. xxi, Sept.–Nov.,* 1932.) *Schott, E. L.*

A study of 400 neuro-psychiatric patients shows a moderately normal distribution of intelligence quotient, with about 20% rating as superior. Of these mentally superior patients 62% have school maladjustments, personality and emotional difficulties being the most frequent. Sex offences as factors in school maladjustment are negligible in the superior group. The roots of the problem are to be found in the home situations, where the school cannot penetrate. Hence the need for a psychiatric clinic to assist in the resolution of family conflicts.

M. HAMBLIN SMITH.

The Sense of Smell in the Neuroses and Psychoses. (*Psycho-analytic Quarterly, vol. i, April,* 1932.) *Brill, A. A.*

This paper contains some interesting remarks on the evolution, psychology and psycho-pathology of the olfactory sense. There are also a number of case-histories, including that of a congenitally blind necrophilic, whose sense of smell had attained the same importance as in animals and primitives. Two cases with obsessional ideas of halitosis are discussed; the other senses being intact, it is presumed that the olfactory sense was constitutionally enhanced. In the psychotic olfactory hallucinations are usually disagreeable, even if sexually stimulating. They are frequently present in schizophrenia, and the prognosis is stated to be invariably bad. Occasionally the *renifleur* finds a successful adjustment by means of vocation; one man, following treatment, became a florist and another a perfumer.

STANLEY M. COLEMAN.

The Bio-Analysis of the Epileptic Reaction. (*Psycho-analytic Quarterly, vol. i, Oct.,* 1932.) *Kardiner, A.*

Privation, so useful a concept for the understanding of the transference neurosis, leaves many problems unsolved in the case of the traumatic neuroses and epilepsies. In this paper the two latter are approached from a new ætiological aspect—that of trauma. It is found that as the result of trauma which injured either psychic or somatic portions of the body-ego, a series of purely inhibitory or contractile phenomena appear which involve either localized portions of the body-ego (sensory or motor organs) or the entire sensorium (the epileptic reaction), and which are accompanied by secondary processes in the autonomic system, and by a group of highly specific psychic manifestations (the "epileptic character", etc.). In

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essential epilepsy the contractile phenomena are also defence reactions against trauma, but in this case the interference is not exogenous, but endogenous or organic.

STANLEY M. COLEMAN.

The Question of Prognosis in Narcissistic Neuroses and Psychoses. (*Int. Journ. of Psycho-Anal., Jan.*, 1933.) *Clarke, L. Pierce.*

Formerly only transference-neuroses were considered open to influence by analysis, narcissistic states being regarded as inaccessible. Further investigation has indicated that some degree of therapeutic progress is possible even in the latter. In this paper the necessary modifications of analytic technique are described, and the means of estimating the patient's capacity to meet it and his potentiality for gaining from it are discussed. For the prognosis of the narcissistic neurosis the degree of objectivity must be evaluated; in judging the therapeutic possibilities in a psychosis the "reality contact" must be gauged.

STANLEY M. COLEMAN.

Hallucinations, Pseudo-hallucinations and Obsessions [*Hallucinations, pseudo-hallucinations et obsessions*]. (*Ann. Méd. Psych., Oct.*, 1932.) *Claude, H., and Ey, H.*

The phenomena investigated are divided into three groups: (1) Active obsessions (phobias, obsessional ideas and impulses), characterized by their power of actively forcing themselves upon consciousness. (2) Passive obsessions or pseudo-hallucinations, a large group of phenomena characterized by their parasitic nature. They are appreciated by the subject as lacking reality, but are experienced passively as foreign to the self. They included paræsthesiæ and other morbid sensory impressions; thought echoing; apperceptive representations and internal voices without projection. (3) The term "hallucination" is confined to those phenomena which display the specific property of projection, and is defined as the belief in a non-existent object. The writers consider that these phenomena are dependent upon the following four factors in varying proportions: (1) The anxiety state associated with melancholia; (2) affective complexes in the Freudian sense; (3) physiological mechanisms (cerebral or sensory irritation); (4) a lowering of psychic tension, enfeeblement of the will, or Janet's psychasthenia.

STANLEY M. COLEMAN.

Cataleptic Sleep [*Sommeil Cataleptique*]. (*L'Encéph., 27th year, No. 8, Sept.-Oct.*, 1932, *p.* 665.) *Claude, Baruk and Porak.*

The authors commence with an *exposé* of the degrees of catalepsy, of which the "*sommeil cataleptique subjectif*" is, perhaps, the most interesting. Catalepsy is described as being seen in depressions, in certain delusional states, in the toxic-exhaustive psychoses, in cerebral tumours, as well as in the schizophrenic reaction types. It is described as a special pathological reaction of the nervous system.

The work plan was to interpret ergographic tracings, taken on a slow drum, of psychomotor activity in catalepsy, in certain more formally neurological disorders, and in cataleptic states produced by drugs. From this a comparative study was to be made. Briefly the following conclusions were come to: There seems to be an absolute correlation between the psychomotor disturbance and the presence of the *sommeil cataleptique*. Schizophrenics without stupor showed a normal ergographic curve, as did depressives, who in addition showed, as might be expected, an early fatigue curve. Hysterical subjects showed an irregular curve. Other motor disorders, such as paralysis agitans and myasthenia, yielded quite different curves from the cataleptic examples, which were characterized by slowness of commencement, a tendency to perseveration and to the progressive improvement in performance before the onset of fatigue. The conclusion was that the psychomotor disorders of schizophrenia were intimately bound up with and improved *pari passu* with the other features of the cataleptic syndrome.

The exhibition even in small doses of bulbocapnine and scopochloralose produced

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the same type of curve as in cataleptic states, even when the drug was not sufficient to produce any stupor. A striking contrast in type of curve and length of resting period was seen in contrasting cataleptics with Prof. Claude's colleagues and with two of the Ste Anne staff.

The last section of the article ascends to a philosophical level, and on close evaluation the soundness of some explanations of cataleptic behaviour is deservedly criticized, especially the whole question of "volition". Reference is made to the work of Jarkovski, and the psychological process of voluntary movement is interestingly discussed. The description of the subjective experience of the commencing schizophrenic is not new, but it is vivid if not entire. The basis of the argument is that in the absence of any control over the content of the thought, the springs of action become dried up. In conclusion the authors state that in the states where catalepsy interferes with voluntary movement, one is dealing with a threshold value which must be at a certain level to maintain "la cohésion et le contrôle du déroulement psychologique", and that it is essentially this which is disturbed. W. McC. HARROWES.

Is Dementia Præcox of Tubercular Origin? [*La démence précoce est elle d'origine tuberculeuse?*]. (*Ann. Med. Psych., Nov.*, 1932.) *d'Hollander, F., and Rouvroy.*

A series of twelve typical cases of dementia præcox was studied. In each 6 c.c. of cerebro-spinal fluid were removed and injected subcutaneously into a guinea-pig. Characteristic tubercular lesions, especially in the lungs and spleen, were found in eleven cases. In four cases of this series Koch's bacillus was recovered from the tissues of the guinea-pig.

The writers conclude that the tubercular virus is present in the cerebro-spinal fluid of certain cases of dementia præcox. STANLEY M. COLEMAN.

Introjection and Projection in the Mechanism of Depression. (*Int. Journ. of Psycho-Anal., Oct.*, 1932.) *Harnik, J.*

The writer holds that in depression-formation the expulsion of the object prior to introjection regularly occurs orally, and that the expulsion of the devalued object from the ego is a psychic mechanism modelled on the physical prototype of vomiting. A case of neurotic depression is described in order to illustrate this theory. STANLEY M. COLEMAN.

Notes on Psychogenic Depression and Melancholia. (*Psycho-Anal. Rev., Jan.*, 1933.) *Schilder, Paul.*

From the clinical point of view the following types of depression are described: Prolonged sadness after the death of a beloved person; depression with some inhibitions following disagreeable situations of any kind and lasting weeks or months; depressive attitude continuing for a long time, and sometimes over a lifetime; melancholia with classical symptomatology following a traumatic event; the classical depression of the manic-depressive psychosis coming without any apparent psychic cause.

The writer's views are illuminated by an analysed case of psychogenic depression. In this type of depression the patient's chief point of fixation is found to be in the Œdipus region, frustration and conflict concerning hetero-sexual relations being all important. Melancholias on the contrary are found to come to a fuller heterosexual satisfaction; it is almost as if it were not worth while to repress it. The stress in this psychosis is found at a much deeper layer, the primary point of fixation being found in the oral-sadistic sphere. STANLEY M. COLEMAN.

Analysis and structure of a Transient Hypomania. (*Psycho-Anal. Quart., vol. i, April*, 1932.) *Lewin, B. D.*

A hypomanic attack of several days' duration, which arose, developed and subsided during the analysis of a woman with predominantly hysterical symptoms.

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The writer advanced the theory that the hypomanic or euphoric state was really a repetition of the excitement felt in connection with the primal scene.

STANLEY M. COLEMAN.

Measurement of Mental Deterioration in Dementia Præcox. (*Amer. Journ. Psychiat., vol. xii, Nov.*, 1932.) *Schwarz, R.*

Babcock has devised a test, which is based upon the assumption that in mental deterioration the vocabulary of the individual is affected least of all. She uses a series of standardized tests, and determines the mental age with each individual test. The vocabulary test is then given. The mental ages of the non-vocabulary tests are added together and the average mental age found. This mental age is subtracted from the age found by the vocabulary test. We thus obtain a number which is called the inefficiency index. In deteriorated persons this index is mostly minus. Only 6 of 110 dementia præcox patients showed a positive inefficiency index. The inefficiency index increased with the longer duration of the disease and the deepening of the deteriorating process. The method appears to have theoretical justification. Language develops first in the higher mental faculties. The method may be profitably used as an auxiliary criterion to distinguish amentia from dementia and benign mental processes from malignant mental afflictions.

M. HAMBLIN SMITH.

The Misleading Onset of Some Paranoid Syndromes [*Su l'inizio subdolo di alcune sindromi paranoidi*]. (*Il Cervello, vol. xii, Jan.*, 1933.) *Petroselli, F.*

The author describes six cases of paranoid conditions, in which there was an initial stage of depression which successfully masked the true nature of the disorder. In one case the depressive attacks lasted 18 months, in another 16 months; in both cases a diagnosis of melancholia was made. G. W. T. H. FLEMING.

Some Clinical Data on Ideas of Reference. (*The Psycho-analytic Quarterly, vol. i, July*, 1932.) *Kaufman, M. R.*

Psycho-analytical investigation of the phantasy life of a paranoid schizophrenic woman with the object of determining how the feeling of being influenced, as experienced by the patient's genital sensations, originated. The conclusion arrived at is that the influencing instrument in the phantasy is a projection of the patient's own genital, the unconscious formula for which would be, "My father's penis, which I cannot accept as my own, becomes an instrument which then gives me genital sensations". STANLEY M. COLEMAN.

Mixed Psychosis [*Psychose Mixte*]. (*Ann. Med. Psych., Dec.*, 1932.) *Capgras, J., and Joaki, E.*

This clinical history supports the theories advanced by Bleuler and Kretschmer. It concerns a woman, æt. 44, constitutionally paranoid, who, during the last few years, had shown evidence of commencing persecutory delusions. She had received a religious education, which she had ceased to practise after the death of her mother. Her marital life, deprived of all sexual satisfaction, had obliged her to focus all her affection on her only daughter. The latter was killed at the age of 24 by a fall from a precipice. After a short period of profound grief, the desire to see her daughter led her into the realm of spiritualism. There followed a phase of mania, characterized by exaltation, versification, singing, and the breaking of symbolic objects. At the same time delusions of grandeur developed; she received messages from the dead; heard voices predicting wars and cataclysms, ordering her to take up a holy mission, and assuring her that she was the reincarnation of Jesus Christ, of Jeanne d'Arc, or of some Eastern goddess. This period of psychomotor over-activity lasted three months, and was followed by a depressive phase of nine months' duration. Projects for the future, grandiose missions, reincarnations of gods and goddesses disappeared and were considered to be the work of

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mystifying spirits. Hope and certitude were replaced by regrets and doubts. Memories of the past, thoughts of faults committed, ideas of sin, fears of damnation repeat themselves in monotonous constancy. Hallucinatory objectivation persisted just as in the expansive phase, but it was no longer the voice of the dead. The voices became contradictory, gave opposing advice, producing a state of irresolution and abulia. Again a painful cœnæsthesia dominated her psychic processes. Thoughts were accompanied by tactile and thermal sensations, which she attributed to rays, while visual hallucinations increased in frequency and intensity.

During the whole course of the illness the fundamental theme, a compensatory delusion of essentially schizophrenic origin, remained intact, and, if anything, became more accentuated. This was a systematic negation of her daughter's death and of all facts connected with it. This theme, inspired by her belief in spiritualism, manifested itself at first by visions of the resurrection of her child, her ascension to heaven, and of her visits to earth; it was further confirmed by automatic writing and auditory hallucination. Later it was substantiated by prelogical reasoning concerning the accident on the mountain and retrospective misinterpretation of the events that followed, leading to the conclusion that the accident never occurred; that the burial was a deception; that her daughter's mutilated body was fictitious, and that she had disappeared because they had hidden her, perhaps in a convent. The impossibility of her ever finding her was the punishment inflicted on a sinful mother. This state of negation was not due to amnesia, nor to intellectual enfeeblement, but to affective incapacity to assimilate a painful fact.

The authors state that the prognosis in the mixed psychosis is generally one of chronicity. It is stated that the addition to paranoia of a cyclothymic element continually aggravates the evolution of delusions of misinterpretation.

STANLEY M. COLEMAN.

Delirium Tremens [*L'encéphalite psychosique aiguë des alcooliques*]. (*Ann. Méd. Psych., Jan.*, 1933.) *Toulouse, E., Marchand, L., and Courtois, A.*

During the period 1929 to 1933, of 1,244 male alcoholics 221 (17·7%), had delirium tremens. Of 369 alcoholic women, 49 (13·3%) had delirium tremens. In women the delirium is usually less acute, an hallucinatory confusion with the characteristic tremor and occupational delusions being met with. It lasts longer than in men, between 4 and 6 days; not infrequently it is followed by Korsakov's syndrome. There were no fatal cases among the women, while 28 men died; in 12 of these cases the delirium was a complication of some infectious illness or trauma. On these figures the writers conclude that the prognosis for uncomplicated cases is good.

A detailed description of the classical syndrome is given, special stress being laid upon the prodromal symptoms; the deliriant's manner of "acting out" his delusions and upon the profound and prolonged sleep which immediately follows the delirium, sometimes lasting 20 hours. The majority of cases were over 40; the youngest was 27, the oldest 81. Occasionally an alcoholic paranoia or hallucinosis evolves out of the delirium. The recurrent deliriant was found to show increasing dementia. An apyrexial stuporose form is occasionally met with; it was found to occur in younger subjects with an alcoholic heredity. The differential diagnosis is usually simple; malaria in a chronic alcoholic presents the only real difficulty.

The blood-urea and bile pigments in the blood are always increased. Pathologically the disease is described as an acute non-suppurative encephalitis with both inflammatory and degenerative changes. Punctate hæmorrhagic encephalitis was found at only one autopsy. The writers believe that the nervous tissue is poisoned by chronic alcoholism, and that, from the same cause, there is auto-intoxication from dysfunction of the liver, kidneys and other organs. Delirium tremens is immediately due to a sudden increase of the auto-intoxication as a result

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of trauma, infection or psychological stress. They find no evidence of an infective encephalitis, nor do they believe that it is due to direct poisoning by alcohol. The paper concludes with some brief notes on treatment. STANLEY M. COLEMAN.

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4. Neurology.

Athetosis. (*Brain, vol. lv, Dec.*, 1932.) *Bucy, P. C., and Buchanan, D. N.*

There is much evidence to show that athetosis is effected by impulses from the cortex cerebri *viâ* an extra-pyramidal motor system, and that removal of the cortex (area 6 aa of Brodmann) or section of these extra-pyramidal pathways will abolish such movements. A case is described of a girl, æt. 7, who, consequent on cerebral damage, suffered from a left hemiparesis, athetosis of the left arm and convulsive epileptiform attacks limited chiefly to the left side. The cerebral cortex was exposed and stimulated, and from a definite area typical athetoid movements were produced. This area was then excised and the athetosis was never subsequently observed. On histological examination, the area of cortex excised showed severe chronic cell degeneration and a hyperplastic meningeal and vascular reaction.

The authors conclude that in this case the athetoid movements were effected by area 6 aa, which was heightened in irritability by some unknown process, and possibly freed from higher (inhibitory) control by degeneration of transcortical connections (to area 4 ?). G. W. T. H. FLEMING.

Distortions of the Visual Fields in Cases of Brain Tumour. (*Brain, vol. lv, Dec.*, 1932.) *Horrax, G., and Putnam, I. J.*

The authors found intracranial tumours confined to the occipital lobes to be comparatively rare, occurring in only 40 instances in 1,881 verified intracranial growths. In 73·6% of tumours confined to or chiefly compressing the occipital lobe, fields of vision showed a contra-lateral homonymous hemianopsia in which the central fibres remain unaffected. This was particularly true of meningiomas situated at the posterior end of the occipital lobe. Visual hallucinations occurred in 15% before operation for tumour removal. Complex "formed" images are not provoked by occipital tumours. G. W. T. H. FLEMING.

Mental Phenomena Observed in Cases of Brain Tumour. (*Amer. Journ. Psychiat., vol. xii, Nov.*, 1932.) *Henry, G. W.*

A digest of more than 1,000 cases of verified brain tumour. The intention is to decide to what extent the psychiatrist may contribute to the diagnosis and the localization. According to their location, brain tumours give rise to mental phenomena, by which the evolution of the cephalic portion of the nervous system may be traced. In the ponto-medullary region mental phenomena are absent, save for an occasional disturbance of tactile sensibility. Neoplasms affecting the base of the brain occasion peculiar and exquisite pain reactions; in general they give rise to manifestations of Parkinsonianism or catatonia. Cerebellar neoplasms occasion disorders in locomotion, and give rise to distant pressure effects. The infrequent tumours in the occipital lobes occasion crude visual hallucinatory phenomena. Neoplasms in the region of the Rolandic fissure disturb specifically human functions, such as reading, writing and speech. Lesions in the temporo-sphenoidal lobes give rise to gross gustatory and olfactory disorders—that is to say, the response is a disturbance of primitive functions. Tumours of the temporal lobes are accompanied by auditory and visual hallucinations characteristic of the functional psychoses. When the frontal lobes are affected, highly organized auditory hallucinations are frequent, and there are gross personality changes. In all cases of suspected brain tumour expert psychiatric observations should be made. The mental phenomena often precede the appearance of neurological changes.

M. HAMBLIN SMITH.

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Cerebral Involvement in Head Injury. (*Brain, vol. lv, Dec.*, 1932.) *Russell, W. R.*

The author studied 200 cases of head injury, and out of these there was a group of 86 which, six months after discharge from hospital, still showed symptoms presumably due to the injury. After eliminating compensation cases, there was a group of 72 left. Headache was present more frequently in the younger age-groups. The type of headache was very constant, and was usually a dull pain referred to the frontal and temporal regions, often throbbing in nature. It was usually made worse by excitement or exertion. In two cases that had previously suffered from migraine, the attacks ceased after the accident. Dizziness, usually a sensation of swimming, occurred more in the later age-groups and was usually slight. Disturbances of memory and mental ability were usually slight and caused little inconvenience. In some cases the loss of memory was severe. Nervousness was fairly common, particularly in the earlier age-periods. In some children the change in character much resembles that seen after epidemic encephalitis. Marked changes in the neuroglia were demonstrated in the brains of cases dying at an interval after the injury. G. W. T. H. Fleming.

Factors Influencing Experimentally Produced Convulsions. (*Arch. of Neur. and Psychiat., vol. xxix, Jan.*, 1933.) *Keith, H. M.*

The author tested various acetone bodies, and found that aceto-acetic acid and its sodium salt have the most pronounced effect in preventing thujone convulsions. Epinephrine, pituitrin S and pitressin augment the convulsant action of thujone. These drugs will cause a subconvulsant dose to become convulsant. The administration of desiccated thyroid gland and of thyroxin did not definitely increase the susceptibility of the rabbits to thujone convulsions. G. W. T. H. Fleming.

An Intravenous Pharmacodynamic Study of the Autonomic Nervous System in the Cryptogenic Group of Convulsive States. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, Jan.–Feb.*, 1933.) *Notkin, J.*

The author investigated a group of 15 epileptic patients of the so-called "cryptogenic type". Seven of these were tested with adrenaline, pilocarpine and atropine, while 5 were tested with atropine only. These three substances are amphotrope in nature, *i.e.*, depending on the dose used and the state of tonicity of each individual system, they all influence the sympathetic and parasympathetic systems.

In determining the type of the vegetative nervous system, adrenalin and pilocarpine are of little use, but atropine is almost a specific. The author thinks that the strength of the vagal tonus may be estimated by the dose of atropine necessary either to inhibit or to completely paralyse it. The dose of atropine required for paralysis of the vagus was always low in individuals with a predominance of the sympathetic system, while in cases of vagotonia larger doses were necessary to inhibit the vagus. In all patients atropine produced sleep shortly after its administration. The author assumes that atropine not only acts on the peripheral end of the vagal system, but on the vegetative centres as well, probably on the periventricular grey sleep regulatory area of von Economo.

G. W. T. H. Fleming.

The Time of Appearance of Epileptic Seizures in Relation to Age, Duration and Type of the Syndromes. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, Feb.*, 1933.) *Hopkins, H.*

The author studied 302 non-institution epileptics, 65 of which were very early cases. The period of sleep, particularly from midnight onwards, and the period of waking from sleep represented the times of greatest incidence of attacks, these periods covering 85% of the attacks.

The author points out that experimental evidence of increased brain volume and increased intracranial pressure during sleep exists. There is suppression of all secretions of the body and actual blood dilution, which reaches a peak at 3 a.m.

G. W. T. H. Fleming.

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Incubation Period of Clinical Neurosyphilis. (*Arch. of Neur. and Psychiat., vol. xxix, Jan.*, 1933.) *Hopkins, H. H.*

The author found that both treatment and inadequate treatment tend to shorten the incubation period of clinical neurosyphilis.

The untreated patients with tabes had a mean incubation period of 24 years; the previously treated group 14·64 years. For the patients with dementia paralytica and the tabetic form of dementia paralytica the figures were 19·54 and 15·32 years; for the unclassified group of neurosyphilitic patients 13·94 and 10·48 years.

There is no increase in the incidence of tabes and dementia paralytica as a result of the modern treatment of early syphilis. G. W. T. H. FLEMING.

Bodily Constitution in Relation to Type of Syphilis of the Central Nervous System [*Il problema della costituzione in rapporta alle forme luetiche del sistema nervoso centrale*]. (*Riv. Sper. di Freniat., vol. lv, Dec.*, 1931.) *Benvenuti, M.*

The impression prevails that in tabes dorsalis there is a microsplanchnic and leptosome type of individual, but in general paralysis there is a macrosplanchnic and pyknic type. Among the factors which determine the special localization of the spirochæte have to be considered anomalies in the "type" of the cord and brain, peculiar to each individual.

In general paralysis there is a tendency for the demented group to be of the leptosome type and the depressed and exalted group to be of the pyknic type. These results correspond to Kretschmer's types in schizophrenia and manic-depressive insanity. G. W. T. H. FLEMING.

Syphilis of the Nervous System in the Sudanese. (*Brain, vol. lx, Dec.*, 1932.) *Hewer, T. F.*

The author examined 400 natives of the Sudan, who presented themselves at the Khartoum Civil Hospital and other hospitals. 6·75% of the 400 cases presented clinical neurosyphilis; of these, 74% had pathological fluids. Of 359 cases, 121 presented pathological fluids, *i.e.*, 33·3%.

After the period of secondary invasion the incidence of changes in the spinal fluid sinks to the level obtaining in white races, and that in the latent tertiary phase is even lower. The author would explain the absence of parasyphilitic affections in the Sudanese as a result of an actual cell immunity acquired in the early stages of the disease. The neurosyphilitic lesions were gummatous or vascular—there was only one that was possibly a primary optic atrophy.

G. W. T. H. FLEMING.

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5. Treatment.

An Early Experiment in the Field of Occupational Therapy at the St. Lawrence State Hospital. (*Occupat. Ther. and Rehabil., vol. xi, Aug.*, 1932.) *Hutchings, Richard H.*

It is pointed out that occupational therapy is not a new treatment, because mention is made of such therapy in the second and third Annual Reports of the New York State Lunatic Asylum, for the years 1844 and 1845. It is known that in a mental hospital some patients will work voluntarily, while many more need much persuasion before they will interest themselves in anything. As a beginning with these latter patients, very simple activities are necessary. The suggestion is made that the doctors do not co-operate sufficiently in this therapeutic attack on the disinterested and difficult patients, and the author pleads for a closer working relationship between the occupational therapist and the other members of the staff. F. H. HEALEY.

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Development of a Division of Therapeutic Treatment by Occupation in New York State Hospitals. (*Occupat. Ther. and Rehabil., vol. xi, Oct.*, 1932.) *Smith, Philip.*

A description is given of the development of the Department of Mental Hygiene in the New York State Hospitals from 1788. The Occupational Therapy Department is only ten years old, although as long ago as 1798 the therapeutic value of occupation for cases of mental disease was stressed by Dr. Rush. About 1850 Dr. Gray organized whittling classes for men, and in 1900 Dr. Dent employed an amusement directress at the Manhattan State Hospital. In the early years of this century many hospitals developed departments to provide occupation and amusement for their patients, but there was no organization of the treatment until after the Great War. In 1920 Dr. Pilgrim formed a National Society for the Promotion of Occupational Therapy. A director was appointed in 1922. Thus a new conception has arisen in the care of chronic mental patients, and in no case is a patient regarded as hopeless. F. H. HEALEY.

Occupational Therapy: Its Aims and Developments. (*Occupat. Ther. and Rehabil., vol. xi, Aug.*, 1932.) *Kidner, T. B.*

In chronic diseases the main distress is mental, and occupational therapy helps to overcome this distress. The greatest benefit accruing from occupational therapy is the joy and satisfaction that is obtained from creating something. It satisfies a basic desire to make something useful. In the application of this therapy it must be remembered that the article made is merely a by-product. The cured patient is the end-product. It is recorded that the American Occupational Therapy Association has established a National Directory to enable institutions to select properly qualified occupational therapists. F. H. HEALEY.

The Therapeutic Relationship of Interest to Effort. (*Occupat. Ther. and Rehabil., vol. xi, Oct.*, 1932.) *Davis, John Eisele.*

The first essential for the occupational therapist in dealing with the patient is to find his interest level. The author describes how this is accomplished. A table is given from Menninger's book, *The Human Mind*, showing abnormal psychological reactions, and from this table is constructed a diagram summarizing the author's views on the problem of the reconstruction of the mind in the psychotic.
F. H. HEALEY.

Say it with Music. (*Occupat. Ther. and Rehabil., vol. xi, Oct.*, 1932.) *Thompson, B. A.*

A note on the effect of musical endeavour on the psychotic, showing that in the author's experience the interest aroused by an attempt to take part in co-ordinated music is of great benefit to the patient, and assists in mental recovery.
F. H. HEALEY.

The Treatment of Non-Organic Psychoses [*Sur le traitement des psychoses non-organiques*]. (*L'Encéph., 27th year, No.* 8, *Sept.-Oct.*, 1932, *p.* 684.) *Prengowski, Pierre.*

The article begins by stating that, besides the two principal nosological groups, dementia præcox and manic-depressive psychoses, there exists a group characterized by disorientation, affective intensification, hallucinations, mostly visual, and lucid intervals. This thesis was expounded more fully in two articles by the same author ("Un groupe particulier de maladies psychiques fonctionelles", *L'Encéph.*, 1927, and in *Allgem. Zeitschr. f. Psych.*, vol. lxxxvi, August 6th, 1927).

He regards dementia præcox—for he feels with Claude that this term is not synonymous with schizophrenia—as being primarily a vaso-vegetative disorder and not associated with endocrine dysfunction. The latter, he says, is the ætiological factor in the group described above.

The vasomotor disturbance in dementia præcox, which, he says, is essentially

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a peripheral vaso-constriction, can be treated by means of specially shaped rubber hot-water bags applied to the spine. He claims therapeutic success and quotes three cases. Contra-indications are arterio-sclerosis, any febrile condition, and any possibility of tuberculosis.

With regard to the cases of endocrine-ætiology, he has found that injections of epiphysan produce an effect "vraiment extraordinaire" and he quotes four cases. He has also used agomensin with effect. Mention is made of the school of Cotton and his co-workers, and of the treatment by metal injections. The article is a valuable account of an energetic and thoughtful if somewhat empirical attack on the problem of treatment. W. McC. HARROWES.

Observations on the Use of Sodium Amytal and Nembutal. (*Irish Journ. Med. Sci., Jan.*, 1933.) *Murphy, Oswald J.*

Forty-eight cases were given sodium amytal as a basal narcotic. There were no fatalities. Ten cases required no supplementary anæsthetic. In one case with brain tumour a full dose of amytal had very little effect, the patient being restless throughout the operation.

Seventy-three cases were given nembutal as a basal narcotic. The author found that with this drug the effects passed off more rapidly than with amytal, and there was not the same tendency to restlessness. One case died after 5·5 gr. had been administered. The author advises the use of ephedrine as a prophylactic against shock due to fall of blood-pressure. F. H. HEALEY.

Premedication with Nembutal. (*Irish Journ. Med. Sci., Jan.*, 1933.) *Shaw, R. W.*

A history is given of the development of basal anæsthesia with barbiturates. Nembutal is pento-barbital, and is a white powder soluble in water. A solution is made with distilled water containing ·75 gr. per c.c. and injected intravenously at the rate of 1 c.c. per minute. Sleep is rapidly induced, and the sensation is pleasurable. Complete unconsciousness usually results when 7 c.c. of the solution have been given. The patient then requires very little of the main anæsthetic. Headache and vomiting are rare. It is said that mental cases should not be given nembutal because restlessness occurs in some cases 3-3½ hours after administration, and one case became violent until fully anæsthetized with ether. This is contrary to the findings in mental hospital practice as recorded by MacMillan.

F. H. HEALEY.

Glucose-Insulin Administration in Prolonged Narcosis. (*Lancet, vol. i, March 4, 1933, p. 464.*) *Quastel, J. H., and Ström-Olsen, R.*

Ketosis is a frequent accompaniment of the prolonged narcosis treatment, and has hitherto been regarded as an indication for suspending the treatment. The authors refer to their recent investigations on the mode of action of the narcotics used (*vide* p. 412), from which it appears that these drugs inhibit the oxidation of glucose and lactic acid by the brain-cells. They believe that there may be an interference with the carbohydrate metabolism of other organs also. They have adopted, provisionally, the practice of counteracting the ketosis by administering insulin (5–15 units) and glucose (50 gr.) along with each dose of somnifaine, in all cases where ketonuria appears. Thirteen cases have in this way been enabled to complete their course of treatment. It is suggested that glucose and insulin might well be given prophylactically from the commencement of the treatment.

A. WALK.

Action of Scopolamine and Carbon Dioxide on Catalepsy Produced by Bulbocapnine. (*Arch. of Neur. and Psychiat., vol. xxix, Feb.*, 1933.) *Paterson, A. S., and Richter, C. P.*

The authors point out that it is futile in the present state of our knowledge to attempt to relate the conditions produced by bulbocapnine to either human catalepsy or paralysis agitans. In experiments on monkeys with bulbocapnine the

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grasp reflex is present. Scopolamine caused a marked prolongation of the effects of bulbocapnine. Carbon dioxide had different effects, depending on the dosage. In from 15–25% concentration administered for from 1–2 minutes, it caused an increase in the length of time that the animal hung, after the gas was discontinued. In from 35–50% concentrations it caused a decrease in the hanging response with a subsequent increase. The effect of the higher concentrations closely resembled that on the catatonic symptoms of man. The authors subsequently found that both carbon dioxide and scopolamine when given alone elicited the grasp reflex and the hanging response. As scopolamine relieves the muscular disturbances in paralysis agitans, this action would appear to be different from that after bulbocapnine has been given. G. W. T. H. FLEMING.

Use of Carbon Dioxide Mixture in Stupors Occurring in Psychoses. (*Arch. of Neur. and Psychiat., vol. xxix, Feb.*, 1933.) *D'Elseaux, F. C., and Solomon, H. C.*

The authors administered gaseous mixtures containing from 5–35% of carbon dioxide and from 20–30% of oxygen, the remainder being nitrogen. No single factor, whether it be acidosis, CO_2 tension, etc., appears sufficient to explain the temporary arousal from stupor. The fact that the procedure is a shock to the system appears to the authors to play a part; several patients expressed a wish not to die. A variety of psychological factors enter into the problem, and may alter the response. The authors conclude that no adequate explanation has been advanced. G. W. T. H. FLEMING.

Surgical Relief of the Headache of Migraine. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, Jan.*, 1933.) *Dickerson, D. G.*

The author, after discussing some of the theories bearing on migraine, describes his results from ligation and section of the middle meningeal artery in 7 cases of patients suffering from headache diagnosed as migraine.

Three out of four cases operated on for migraine were cured, and in the other case the headache was cured on the right side, but not completely on the left. In three other cases operated on for serious head injuries a previous recurrent headache, apparently migrainous, was cured by the operation.

G. W. T. H. FLEMING.

Improvement in Nervous and Mental States under Cortin Therapy. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, Jan.*, 1933.) *Hartman, F. A., Beck, G. M., and Thorn, G. W.*

The authors used "cortin" therapy with varying success in three cases of Addison's disease, three showing fatigue without demonstrable adrenal insufficiency and five organic neurological cases. Two cases of myasthenia gravis were treated but showed no improvement. G. W. T. H. FLEMING.

Intraspinal Therapy in Neurosyphilis [*Terapia endorachidea della neurosifilide*]. (*Il Cervello, vol. xii, Jan.*, 1933.) *Riquier, G. C., and Quarti, G.*

The authors treated 48 general paralytics, 5 tabo-paretics and 21 tabetics with an oily suspension of alkaline bismuth tartrate (trépol) given intraspinally. The dose given was 25–50 mgrm. of trépol. Of the 48 general paralytics 18 showed a moderate remission, 7 a good remission, and 3 an extremely good one. The expansive type responded best to the treatment. All cases received subsequent treatment with bismuth and arsenobenzols. Amongst the 5 tabo-paretics, in 3 there was some improvement. Amongst the 21 tabetics treated with 2–5 injections, 14 showed some improvement. G. W. T. H. FLEMING.

Diathermy in Treatment of General Paresis. (*Amer. Journ. Psychiat., vol. xii, Nov.*, 1932.) *McKay, H. A., Gray, K., and Winans, W. C.*

A series of 32 patients treated by diathermy in conjunction with chemotherapy is presented. The Victor super-power diathermy apparatus was employed. The

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course of treatment has been completed in 28 cases. Of these 28 complete remission was produced in 3, almost complete remission in 8, partial remission in 7, and no improvement in 6 cases; but the patients in the last-named group are quieter and cleaner. There were 3 deaths during treatment; and one of these deaths is regarded as being due to the diathermy. M. HAMBLIN SMITH.

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6. Pathology and Biochemistry.

The Histopathology of the Brain in Dementia Præcox and the "Racemose Areas of Disintegration" during 1929–31 [*Istopatologica dell encefalo di dementi precoci e "zolla di disintegrazione a grappolo" nel triennio* 1929–31]. (*Riv. di Pat. Nerv. e Ment., vol. xxxix, March–April,* 1932.) *Buscaino, V. M.*

From an extensive review of the literature during the triennium 1929–31, the author concludes that dementia præcox as a pathological process *sui generis* is an organic disease of the central nervous system. Encephalograms go to confirm this. The disease is essentially of degenerative origin. In none of the cases on which these opinions are based were tubercular lesions present, and the cases were not of long standing. Cellular lesions were most frequent. In recent cases there was vacuolar degeneration and atrophy; in chronic cases, fatty degeneration and sclerosis. He considers that the "racemose areas of disintegration", from their staining affinity for mucicarmine, contain galactolipoids. The lesions are mostly in the cortex, but also in the subcortical regions, according to the type of case. In catatonic cases the lesions in the striatum are more pronounced. The frontal lobe is frequently affected. The third cortical layer of cells is usually attacked, and sometimes the fifth and sixth. The lesions vary enormously from one area to another. The author considers that the irregular distribution of the lesions explains the "dissociation" of the disease. G. W. T. H. FLEMING.

Effect of "Habituation" on Blood-pressure in Schizophrenia. (*Arch. of Neur. and Psychiat., vol. xxix, Jan.,* 1933.) *Freeman, H.*

The authors, on studying the systolic and diastolic pressures in 50 cases of schizophrenia in three periods, three months apart, found that both pressures were lower in the second than in the first period. The systolic pressure stayed at approximately the lower level in the third period, but the diastolic pressure rose to an intermediate level. The fall in systolic pressure on repeated determinations is ascribed to habituation to the environmental situation.

This observation seems to emphasize vascular hypotension as a characteristic of the schizophrenic psychosis.

In repose the schizophrenic shows an unusual slump in blood-pressure which the normal individual does not show. G. W. T. H. FLEMING.

Researches on the Cerebro-spinal Fluid in Dementia Præcox during 1929–31 *Le recerche sul liquor dei dementi precoci nel triennio* 1929–31]. (*Riv. di Pat. Nerv. e Ment., vol. xxxix, March–April,* 1932.) *de Giacomi, U.*

The author finds from his survey of the literature during 1929–31 that in more than 50% of cases of dementia præcox the fluid presents changes generally small, but nevertheless of importance. These changes consist of a decrease in meningeal permeability and in the rate of reabsorption of the fluid. There is also a slight increase in the protein without any lymphocytosis. These changes are more often found in the hebephrenic-catatonic types than in the paranoid, and in chronic cases more often than in recent ones. The general findings give support to the view that there is in dementia præcox a slow disintegration, slight but progressive, of the cerebral parenchyma, with accumulations of the products in the cerebro-spinal fluid. G. W. T. H. FLEMING.

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The Shellac Reaction on the Cerebro-spinal Fluid [*La reazione della gomma lacca nel liquido cefalo-rachidiano*]. (*Il Cervello, vol. xl, May*, 1932.) *de Marco, A.*

The author used the shellac reaction as first described by Urechia and Danetz in 1923. He found the curve in general paralysis to be 321,000,000. The results were similar to those obtained by the gum-mastic reaction. A concentration of ·8% of salt solution was used. G. W. T. H. FLEMING.

A Contribution to the Citochol Reaction of Sachs-Witebsky [*Contributo alla reazione (Citochol) di Sachs-Witebsky*]. (*Il Cervello, vol. xl, July*, 1932.) *Zara, E.*

The author carried out the citochol reaction of Sachs-Witebsky on 250 sera and 64 spinal fluids, and controlled his results with the Wassermann in the sera, and the Wassermann together with other reactions in the spinal fluid.

He concludes that this reaction may well be used as a complement to the Wassermann reaction in the sero-diagnosis of syphilis.

G. W. T. H. FLEMING.

The Cerebro-spinal Fluid in 230 Cases of General Paralysis after Malarial Treatment. (*Journ. of Neur. and Psychopath., vol. xiii, Jan.*, 1933.) *Reid, B.*

The author finds that the spinal fluid improves after treatment with malaria, and may become normal. This usually takes several years to occur. The improvement in the fluid occurs in patients who have improved mentally and also in those who do not improve. G. W. T. H. FLEMING.

A Study of the Cerebro-spinal Fluid in General Paralytics Treated with Malaria [*Estudio del Liquido Cefalo-Raquideo en los Paraliticos Generales Malarizados*]. (*University of Buenos Aires*, 1932.) *Kafer, J. P.*

This study is based on the investigation of 17 cases. The author distinguishes four periods, as a purely schematic arrangement: (1) A malarian period characterized by attenuation of the fluid pressure; (2) a primary post-malarian period, extending over the year after the cessation of fever, and characterized by attenuation of the pleocytosis; (3) a secondary post-malarian period, extending over the second year from the cessation of the fever, during which the attenuation of the pleocytosis is continued; (4) a later period, during which, in some cases, the reactions become normal. M. HAMBLIN SMITH.

Oxygen Consumption ("Basal Metabolic Rate") in Schizophrenia. (*Arch. of Neur. and Psychiat., vol. xxviii, Dec.*, 1932.) *Hoskins, R. G.*

The author found the rate of oxygen consumption in 214 male schizophrenics of average age 30·2 years to be 88·3% of the standard normal. The rates for each sub-group were: catatonic 87·9%, hebephrenic 89·4%, paranoid 87·9%, simple 95·0% and indeterminate cases 88·8%.

The average lowest reading was 81·1%. The author considers that this more nearly represents the true basal rate than does the average mean rate (88·3).

The data reported offer no evidence as to whether the downward displacement of the rate is causative of, consequential to, concomitant with or integral in the psychosis proper.

The author found a polymodal distribution in all but the paranoid group, and thinks that this casts some doubt on the nosological homogeneity of these other groups. G. W. T. H. FLEMING.

pH of Blood of Psychotics Measured by the Glass Electrode. (*Biochem. Journ., vol. xxvi, No. 5*, 1932.) *Hurst, R. H.*

The author, using the glass electrode outfit described by Kerridge, found no significant difference of schizophrenics from the normal, either in the resting condition or in the early stages after alkali ingestion. As the result of exercise the

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schizophrenic has a blood-pH lower than that of the normal for a given lactic acid content. The author thinks that this is due to diminished excitability of the respiratory centre. G. W. T. H. FLEMING.

Blood-urea Changes in Abnormal Mental States after the Administration of Amino-acid. (*Biochem. Journ., vol. xxvi, No.* 3, 1932.) *Lockwood, M. R., and Davies, D. R.*

The blood-amino-acid changes after the administration of gelatin or glycine to 17 psychotics of varying types showed no material difference from the normal. The characteristic blood-urea curve of agitated and simple retarded melancholia is typified by rapid and uniform changes, the total extent of the changes showing a marked increase over the normal. There is a rapid rise to a high level, followed by a rapid fall within the 5-hour period to the fasting level.

The authors describe a second curve in which, while the early changes are fluctuating, the maximum reading is obtained later than in the normal, the actual changes again being larger than the normal. This is found to occur during recovery from melancholia and in apathetic states generally. The rise in urea level is slow, reaching its peak at the fifth hour of the test period. The authors found marked variations between individuals in the dementia præcox group as a whole, and so were unable to draw any conclusions from this group. They think that the changes noted may be due to some disturbance of factors which control the rate of entry into, and disappearance from, the blood of urea, since Addis, Barnett and Shevkey have shown that adrenaline and pituitrin regulate urea excretion.

G. W. T. H. FLEMING.

Oxidations by the Brain. (*Biochem. Journ., vol. xxvi, No.* 3, 1932.) *Quastel, J. H., and Wheatley, A. H. M.*

Human grey matter shows least activity towards the oxidation of succinate. The rate of oxidation of added substrates to the brain varies inversely as the size of the animal. Glucose, sodium lactate and sodium pyruvate at equivalent concentrations are oxidized at approximately the same rate by brain-tissue. Glucose is not appreciably oxidized by brain in Ringer's solution. The addition of phosphate buffer to Ringer's solution restores the rate of oxidation due to glucose. Lactate is probably completely oxidized by brain. The addition of serum increases the oxygen uptake by the brain. Iodo-acetic acid (M/4,000) inhibits the oxidation by brain of glucose, fructose and mannose, but only partially inhibits the oxidation of lactate, pyruvate and glutamate, and has no effect on succinate oxidation. In a mixture of lactate and succinate, the oxidation of the latter is inhibited by an amount exactly equivalent to the oxidation for which the lactate alone is responsible. This action is probably due to the competition of lactate with succinate for the oxidized form of a carrier, possibly cytochrome, which Holmes has shown to be abundant in the grey matter. G. W. T. H. FLEMING.

Dehydrogenations by Brain Tissue; The Effects of Narcotics. (*Biochem. Journ., vol. xxvi, No.* 5, 1932.) *Davies, D. R., and Quastel, J. H.*

Quastel and Wheatley had shown that the exposure of fresh brain-tissue to narcotics at low concentrations results in specific inhibitory effects on the oxidations of the brain. The narcotics exert a profound inhibitory action on the oxidation of substances important in carbohydrate metabolism, *i.e.*, glucose, lactic and pyruvic acids. The narcotics at the same concentrations do not interfere with the oxidation by the brain of sodium succinate or p-phenylenediamine. Narcotics of the same chemical type with the greater hypnotic activity have the greater inhibitory action on the oxidation by the brain of glucose or lactic acid. In the present research the authors found that the dehydrogenating power of grey matter is three to four times as great as that of white matter. Glucose, fructose, galactose and mannitol are activated as hydrogen donators by fresh brain-tissue. The activities of glucose and fructose are less than those of sodium succinate, sodium lactate and sodium

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pyruvate. The exposure of brain to narcotics (somnifen, luminal and chloretone) results in an elimination of the activation of the sugar, those of sodium succinate and glycero-phosphate being relatively undisturbed. The narcotic and sodium lactate compete for the same activating enzyme. G. W. T. H. FLEMING.

The Effect of Alcohol on the Oxygen Uptake of Brain-tissue. (*Biochem. Journ., vol. xxvi, No. 1, 1932.*) *Robertson, J. D., and Stewart, C. P.*

Ethyl alcohol at first increases the rate of oxygen uptake of brain-tissue. This increase, which is greater in grey matter than in white, lasts for about an hour, and is followed by a fall to slightly below the normal rate. The authors suggest that alcohol is adsorbed on the oxidizing surfaces, thereby displacing more usual metabolites, but is more slowly oxidized. The initial increase in the rate of oxygen uptake is explained on the assumption that the alcohol first takes up unoccupied parts of the surfaces. The alcohol content of the brain reaches its maximum under experimental conditions in about half an hour, and has fallen very slightly in four hours. G. W. T. H. FLEMING.

The Relationship between Sugar in Blood and Lactic Acid in Brain. (*Biochem. Journ., vol. xxvi, No. 2, 1932.*) *Holmes, E. G., and Sherif, M. A. F.*

The lactic acid content of mouse brains fixed rapidly in liquid air is invariably low. The amount of lactic acid formed on anaerobic incubation depends on the blood-sugar level at death, up to a blood-sugar value of some 200 mgrm. per 100 c.c. At higher levels there is a smaller increase in lactic acid in proportion to the increase in blood-sugar, but this increase is accounted for by a corresponding failure of the brain-tissue to take up carbohydrate. At blood levels at which hypoglycæmic symptoms occur, the resting brain lactic acid level is decreased.

G. W. T. H. FLEMING.

The Calcium and Phophorus Content of the Brain in Experimental Rickets and Tetany. (*Journ. of Biol. Chem., vol. xcviii, Nov., 1932.*) *Hess, A. F., Gross, J., Weinstock, M., and Berliner, F. S.*

The authors found that rickets in the rat was associated with a marked decrease in the total calcium and the percentage of inorganic phosphate in the brain, in spite of the fact that the diet was high in calcium.

There was no relationship between the concentration of the calcium in the blood and its concentration in the brain. In rickets the total calcium is normal in the blood and diminished in the brain; in parathyroid tetany it is low in the blood and undiminished in the brain. G. W. T. H. FLEMING.

Further Observations on the Nature of the Highly Unsaturated Fatty Acids of Beef Brains. (*Journ. of Biol. Chem., vol. xcvii, July, 1932.*) *Brown, J. B.*

The author prepared the methyl esters of the highly unsaturated fatty acids of beef brains. The acids belonged chiefly to the C_{22} series. Docosapentenoic was the predominant acid present, together with small amounts of docosatetrenoic acid. There was no evidence of the presence of ordinary arachidonic acid, such as occurs in the glandular lipids. There was little or no evidence of the presence of acids below the C_{22} series. Possibly small amounts of tetracosapentenoic acid were present. G. W. T. H. FLEMING.

The Destruction of Cholesterol by the Animal Organism. (*Journ. of Biol. Chem., vol. xcvii, Aug., 1932.*) *Page, T. H., and Minschick, W.*

An endeavour was made to alter the cholesterol content of the brain and vascular system by the feeding of cholesterol to rabbits. The authors found that administered cholesterol was deposited throughout the body except in the brain. From ·8–1·8 grm. per week was destroyed. G. W. T. H. FLEMING.

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Cholesterol and Lecithin Content of the Blood in Cryptogenic Epilepsy. (*Arch. of Neur. and Psychiat., vol. xxix, Jan.*, 1933.) *Rosen, I., Krasnow, F., and Notkin, J.*

The authors investigated 47 cases of epilepsy. They found that the average values for the cholesterol and lecithin content did not differ from the normal. All specimens of spinal fluid examined (20) contained small amounts of cholesterol.

No correlation was apparent between the cholesterol content of the spinal fluid and that of the blood. G. W. T. H. FLEMING.

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7. Criminology.

Psychology of Crime. I. (*Brit. Journ. of Med. Psych., vol. xii*, 1932.) *Good, T. S.*

The author deals with this subject on the basis of his own experience, giving as the three groups from which he considers criminals originate—mental defectives, moral defectives and unstable supernormals.

He states that crime is now, in the opinion of many, a mental illness, and is due to faulty upbringing in childhood. The anti-social behaviour is essentially due to a conflict between the instincts of self-preservation and sex—that is, between egoistic and altruistic tendencies.

Psychology of Crime. II : The Place of Psychology in the Treatment of Delinquents. Field, H. E.

This article gives a survey of the study of crime by an understanding of mental mechanisms, conscious and unconscious. The treatment of the criminal by psychological analysis is probably not applicable at all in some cases, and often where applicable it is not by itself sufficient. Burt has reported considerable success in treating some young offenders by graded moral exercises. It is pointed out that some authorities consider crime as a mental disease, but others regard it as merely an environmental reaction. The primary aim in treatment is to check anti-social conduct, and the secondary aims are the improvement of morals and culture. It is noted that the results of treatment at Borstal are such that 60–70% of the ex-inmates do not again come in conflict with the law.

The question of punishment is discussed. Belief in the efficacy of punishment alone as a cure for delinquency has been well shaken. Treatment and training are now in the foreground of the policies of modern penal authorities. At Borstal deprivations of privileges, which are appeals at the pleasure-pain level, are much used, especially in combination with explanation and persuasion. Punishment is one of the devices necessary to bring or to keep certain individuals in touch with reality, but it is a dangerous instrument and may stimulate unhealthy trends, as, for example, a wish for punishment.

Psychotherapy has an unanswerable claim to be included amongst the treatment devices provided by institutions dealing with delinquents. Healy and Burt have established that among young delinquents, mental problems arise that call for and respond to systematic psychological analysis.

In England and in the United States of America the public has been educated as to the value of psychology in the treatment of criminals, but little has been done to educate the delinquent population as to what they can gain from applied psychology. The author thinks that selected mental hygiene literature might be given to the inmates of penal institutions, provided that care be taken not to weaken the sense of personal responsibility and not to encourage mental invalidism. In the Borstal system during the past few years psychological examination of intellect and temperament has been carried out for the purposes of diagnosis and classification. At Feltham provision has been made for formal psychological treatment.

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In the treatment of the criminal, as in the treatment of the psychotic, re-education of character has to be carried out at several mental levels, and the individual approach must be supplemented by general measures. It is pointed out that the view of the sociologist is macroscopical, while the view of the analytical psychologist is microscopical.

The application of the methods of psychology to the problem of delinquency will result in more effective and more economical control of crime, but the author stresses the fact that there exists a certain amount of intractable material among delinquents.

Psychology of Crime. III : The Element of Persecution. Christie, T.

The author looks at the psychological aspect of the young delinquent from a new angle, and shows an association between delinquency and insanity. He postulates that the idea of persecution is based on a sense of injustice which results from a feeling of inferiority. He shows that there are three degrees of this persecutory trend, namely a minimum, a medium and a maximum degree. The last-named is the certified paranoid case of mental hospital practice. Two interesting cases are described showing how criminal careers were established on this basis of persecutory ideas.

Psychology of Crime. IV. Rickman, John.

In this paper three points in criminal psychology are emphasized: (*a*) the inability of the criminal to give a reasonable explanation of his act, (*b*) the compulsive element in crime, (*c*) the fact that criminals do not appear to be as aggressive as the public think. The first two points are shared with the neurotic.

It is stated that crimes are attempts at relief from conflict. The basis of the conflict is said to be the "Œdipus situation". Sadistic fantasies and bad homes are the lot of many neurotic and unhappy persons, but the central feature in the criminal's life is a split in his mind in the field of instinctual discharge. The criminal fails to integrate the aggressive impulse into the structure of his mental life, the break from the normal occurs early in life, and this early failure in integration is the specific causal factor in crime. It is aggravated by a lack of parental love, which hinders the criminal from realizing that love is a bond in personal and social life. Criminals have an emotional difficulty in applying themselves to every-day work. Work requires a pliancy in respect to activity and passivity; this pliancy the criminal lacks and he cannot work harmoniously with others. Psycho-pathological theories concerning the specific ætiological factor in criminality fall into two groups—those which class it with the neuroses, and those which class it with the character traits. The criminal has been thought of as wicked and not as ill, especially in the early days, when neurotic symptoms were not understood. The most valuable contribution made by psychopathologists to the study of crime is in the clarification of ætiological factors; when these are confused, the work of the lawyer, the eugenist and the sociologist is painful, uncertain and wasteful.

Psychology of Crime. V. Glover, Edward.

This author stresses the relative importance of psychological and sociological factors in the treatment of crime. That a difference of opinion exists is obvious from a comparison of the psychological presentation by Rickman with the sociological presentation by Field. The difference would be even more obvious if the sociological factor were limited to the environmental influence exerted on a child from birth to the age of five. Even among psychologists there is a striking divergence of opinion as to the genetic significance of environmental factors, and an even greater difference of opinion as to the therapeutic importance of environmental handling during the first five years.

He points out that the main obstacle to progress in criminology is not so much the ignorance and inertia of the public, as the emotional barriers in the minds of

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those most concerned in the advancement of the science. The science of psychology is not itself immune from moral and emotional bias. There are few psychologists who would claim to be able to rear a child to the age of five with any certainty of success. The crucial test of capacity to control an individual through environmental influence has not yet been passed by anyone, psychologist or layman. This consideration has a bearing on criminology in two ways: it reminds us that there is scope for experiment in familial education and sociology of the first five years, and that however successful this experiment may be, there are deep factors of a primitive order which require a specialized form of manipulation. The medical section of the Association for Scientific Treatment of Delinquency and Crime should focus attention on the divergent views and tendencies of individual psychology. F. H. HEALEY.

Concerning the Dynamics of Crime. (*Psychol. Clin., vol. xxi, Sept.–Nov.*, 1932.) *Johnson, A. E.*

The criminal and the neurotic show the same deviation from the normal in the developmental process. In both there is a failure of the integrative forces in the personality. The difference between the criminal and the neurotic lies in their differing ability to bear stress. The criminal does not bear stress well; he is constitutionally incapable of sustained effort or strain; he must do something at once to get relief. Criminals are only unhappy when they are driven back on their neuroticism by obstruction to action. The commission of a crime and surrender represent two efforts to escape from unbearable tension. A complete change of attitude in our view of crime is necessary. The problem cannot be solved by emotion of any kind. The objective, impersonal attitude of the scientist must be adopted. Free-will and responsibility are obsolete conceptions. We must concentrate on developing ways of integrating personality. M. HAMBLIN SMITH.

Psychiatry and the Criminal. (*Amer. Journ. Psychiat., vol. xii, Nov.*, 1932.) *Leavitt, F. H.*

The author traces the gradual development of "law" and considers the various objects of "punishment". The present situation in the United States is most serious; murder in the great cities is from ten to twenty times more frequent than in European cities of similar size. Methods of prevention suggested are greater care of youth in the city centres, for these latter are the main breeding-grounds of the "criminal". Child guidance clinics are favoured, for criminality is often the outcome of untreated personality difficulties. It is essential that all persons accused of felonies should be fully examined before trial, so that the judge may have some knowledge of the person with whom he is dealing as well as of the particular anti-social act which that person has committed. A psychiatric clinic should be attached to every juvenile court. Probation officers should be better paid, should have training in psychology, and should be given fewer cases to supervise. About 20% of offenders show a pronounced degree of mental inferiority. The clash of racial cultures is a large factor in the production of crime.
M. HAMBLIN SMITH.

Criminal Impulse in the Algerian Native [*Impulsivité criminelle chez l'indigène algérien*]. (*Ann. Méd. Psych., Dec.*, 1932.) *Porot, A., and Arrii, D.-C.*

A psycho-dynamic study of 40 cases of sudden impulsive crime among the natives of Algeria. Homicide was found to be particularly prevalent, nine-tenths of the crimes being murders or attempts at murder. The case-material falls into two groups. In the first group, 21 cases, the crime proved to be a pathological episode in the course of some psychotic state. These, alcoholic hallucinosis, toxic confusional states, delusional conditions, acute psychomotor crises and twilight or fugue states with or without epilepsy, differed little from the psychoses met with in Europeans. It was noted, however, that in the paraphrenias, delusions

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of a visceral and genital nature predominated, while acute mania was not of the jovial, expansive type common to Europeans, but was characterized by violent anger and hatred.

The second group of 19 cases showed no evidence of psychosis, and was especially instructive in revealing the peculiar temperament of the Algerian. The authors considered that the prevalence of homicide was due to the following constitutional and social factors: Among the former may be mentioned a very low average level of intelligence; an extreme credulity and suggestibility, as shown by belief in demons, etc.; perseveration and obstinacy, rancour and the desire for revenge—examples of reprisals after 5, 10 or even 20 years are quoted; poverty of the affective life and failure of development of the moral sentiment. An Algerian has little respect for human life and family ties are weak, fratricide and parricide occurring frequently.

In evidence of the emotional indifference, the case is reported of a man who, following some slight altercation, kills his father, and then continues his work as if nothing unusual had taken place.

Regarding social factors, it is observed that behaviour is fixed by ancestral custom and that there has been no evolution. Religion plays a very important *rôle* in the life of the Moslem, and a number of homicidal acts committed in a state of mystic exaltation are reported. The Algerian has the instinct of possession strongly developed, being very attached to his meagre property; numerous disputes occur on this score, not infrequently ending in crime. It is marital jealousy, however, that accounts for the majority of homicidal acts. The wife is his property; he has bought her; she satisfies his sexual needs, and is besides his chief domestic animal. It is enough if she is in conversation with another for him to kill at sight.

STANLEY M. COLEMAN.

The Use of Transference in Dealing with Delinquents. (*Amer. Journ. Orthopsychiat., vol. iii, 1, p. 14, January,* 1933.) *Biddle, S.*

In the psycho-therapeutic work with neurotic children, true transference with its elements of fantasy and of unreality rarely develops. On the other hand, a strong libidinous tie between child and physician is an essential. August Aichorn, on whose work this paper is based, is very insistent upon the point.

In the treatment of delinquency three principal difficulties are encountered. Firstly is the delinquent's strong tendency to seek refuge in lying and concealment; secondly, and more difficult to overcome, is the narcissistic make-up so commonly found in delinquents; and thirdly, the tendency in certain cases to form ties emotionally toned with hatred to any person in charge of them.

Aichorn's experiment with a group of incorrigible boys at Oberhollabrun is quoted at some length. Every conceivable method of punishment having previously failed, Aichorn undertook a policy of gentleness and absolute non-interference except to prevent the children injuring one another. The first effect of this was to increase the disorder; corporate life broke down utterly, fights were incessant, and the furniture and windows were smashed. After three months the type of misconduct changed and became more histrionic than real; and this in turn was followed by a period of emotional instability, during which the widest variations in conduct were encountered. Finally the children were welded into a homogeneous unit, reacting normally to their teachers and to each other. C. J. C. EARL.

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Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Quarterly Meeting.

The Ordinary Quarterly Meeting of the Association was held at 11, Chandos Street, London, W. 1, on Wednesday, February 22, 1933, the President, Dr. R. B. Campbell, F.R.C.P.E., *J.P.*, occupying the Chair.

The minutes of the previous meeting, having been printed in the Journal, were taken as read and confirmed.

Obituary.

The President referred to the recent deaths of Dr. Hyslop, Dr. Beadles, Dr. Alan McDougall and Dr. G. E. Peachell, and asked members present to stand in silence as a mark of respect.

Members rose in their places accordingly.

The President said he assumed it was the wish of those present that letters of regret and condolence be sent to the relatives of each of the deceased.

This was agreed to.

Council Business.

The President said that the Council had spent a very busy forenoon. The more important matters, which the general body of members should know about, were the following:

The legal advisers to the Association had pointed out, in regard to the Gaskell Fund, that, in addition to the new trustees who were appointed at the last meeting, it was necessary that the existing President of the Association and his immediate predecessor should also be Trustees. They had accordingly been appointed.

Dr. G. W. Smith had been asked to represent the Association at the Congress of French-speaking Alienists and Neurologists to be held in April next.

Dr. Collins had been reappointed to represent the Association on the General Nursing Council.

It had been arranged that the Campbell Clarke Prize for mental nursing should be awarded at both the May and November Final Nursing Examinations, and that it should be open to both male and female nurses, provided that the candidate had completed his or her course of training in one mental hospital; the value of the prize to be three guineas, together with a suitably inscribed gold medal. The prize would be awarded for the first time at the May, 1933, examination.

The Council had agreed to award a fee of seventy-five guineas to Dr. Adolf Meyer, who was to deliver the Maudsley Lecture in May.

Arrangements for the Annual Meeting were not yet completed, but the President-Elect had informed the Council that the meeting would probably be held at Clacton-on-Sea during the first week of July.

The Council had considered very carefully the report of the British Medical Association on the relation of the general practitioner to the treatment of mental disease, and recommended that the following resolution should be sent from the Association to the British Medical Association.

> "That in the opinion of the Royal Medico-Psychological Association the policy of the British Medical Association with regard to the treatment of mental diseases is not in the best interests of the patients and of psychiatry."

The President added that as this was a very important matter, the Council were anxious that the resolution of protest should go forward as the considered opinion of the entire Association, and he asked the members present to vote upon the Council's resolution.

The resolution was carried unanimously.

It was agreed that Dr. Worth and Dr. Rice—representing the Royal Medico-Psychological Association at the Joint Conference with the Mental Hospitals' Association—should be instructed to lodge a strong protest on behalf of the Association against the British Medical Association's findings.

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ELECTION OF NEW MEMBERS.

The meeting agreed to the list of candidates for membership being voted upon *en bloc*. In consequence, however, of several black balls appearing, separate ballots were taken, the following being finally elected members:

CARRUTHERS, PETER WALTER, M.B., Ch.B.Ed., Assistant Medical Officer, The Old Manor, Salisbury; Montague Villa, 36, Wilton Road, Salisbury.
Proposed by Drs. J. P. Westrup, J. R. Benson and S. Edgar Martin.

OSGOOD, FREDERICK CHARLES, M.B., Ch.B.St.And., Deputy Medical Superintendent, Royal Eastern Counties' Institution, Colchester, Essex.
Proposed by Drs. F. D. Turner, R. C. Turnbull and A. G. Duncan.

FITZGERALD, OTHO WILLIAM STRANGMAN, M.B., B.Ch.Dubl., House Physician, Bethlem Royal Hospital, Monks Orchard, Beckenham.
Proposed by Drs. J. G. Porter Phillips, Murdo Mackenzie and Clement Lovell.

SMITH, GILBERT MACKAY, B.A., M.B., B.Ch.Dubl., D.P.M., Junior Assistant Medical Officer, County Mental Hospital, Berrywood, Northampton.
Proposed by Drs. F. J. Stuart, E. D. Hayes and D. J. O'Connell.

STERN, RUBY OLIVE, M.D.Lond., M.R.C.S., L.R.C.P., Pathologist to St. Andrew's Hospital, Northampton.
Proposed by Drs. Daniel Rambaut, D. J. O'Connell and R. Worth.

STERN, EDWARD SAMUEL, M.A., M.B., B.Ch.Cantab., M.R.C.P., D.P.M., Assistant Medical Officer, Napsbury Mental Hospital, St. Albans.
Proposed by Drs. A. O'Neill, C. E. Roachsmith and E. J. C. Hewitt.

COLAHAN, ARTHUR NICHOLAS WHISTLER, M.B., Ch.B., 9, Prebend Street, Leicester.
Proposed by Drs. K. K. Drury, J. Francis Dixon and T. Wishart Davidson.

GRAHAM, JOHN JAMES, M.B., Ch.B., D.P.M., Assistant Medical Officer and Pathologist, Knowle Mental Hospital, Fareham, Hants.
Proposed by Drs. F. Golla, J. L. Jackson and C. E. Alan Shepherd.

PAYTON, DOROTHY, M.B., Ch.B.Birm., M.R.C.S., L.R.C.P., Assistant School Medical Officer, City of Birmingham; Education Office, Birmingham.
Proposed by Drs. G. A. Auden, K. A. H. Sykes and T. C. Graves.

PAPER.—"**The Rorschach Test and its Clinical Application,**" by DOUGLAS R. MACCALMAN, M.B., Ch.B., Medical Director, Notre Dame Child Guidance Clinic, Glasgow; Late Resident Psychiatrist, Boston Psychopathic Hospital. [*Abridged.*]

Introduction.

Psychiatrists have, in the past, tended to neglect the more academic psychological tests. Nor is this surprising, for most psychological tests have been designed to measure personality in too narrow a sphere. The great mass of psychological testing has, in fact, been restricted to the measuring of intelligence. But "it is an old story that it is one thing to know a patient's intelligence and another to know what are the other elements in his personality; and what these other elements will permit him to do with his intellectual equipment, or, as the case often is, what they will compel him to do with it" (2).

When, in 1921, Hermann Rorschach published in the second volume of *Arbeiten zur Angewandten Psychiatrie* (Bircher, Berne), under the title of "Psychodiagnostik" (1), the methods and results of a diagnostical apperception experiment, consisting in the interpretation of casually created forms, it seemed that the ideal test, from the point of view of the clinical psychiatrist, had been devised. For Rorschach claimed, firstly, that his test was an accurate gauge of intelligence; that, secondly, it evaluated the emotional life of the patient, giving an index to his affective lability and his tendencies to extraversion or introversion; and thirdly, that it threw light on the unconscious mechanisms in personality. Further, he announced that individuals could be classified into various reaction types. He claimed that different reaction patterns were obtained for the different types of normals; for the affective disorders; for the different classes of schizophrenics; for the organic mental disorders; for mental deficiency and epilepsy. In short, he maintained that the test was a diagnostic instrument of surprising delicacy. Over the great majority of other psychological tests also the Rorschach test maintains certain distinct advantages. Education plays but a small *rôle*, and only the highly intelligent normals form a contrast; while the same material is used for all grades of intelligence, so that the results are comparable (3). The material is sufficiently unlike an intelligence test to free the subject from emotional inhibition, incident to the test situation itself, and so gives the clinician a more accurate picture of the equipment available for intellectual functioning in life generally (2).

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These are almost grandiose claims to make for one test, and it is the purpose of this paper to report on its application to the clinical field, and to estimate the truth of Rorschach's assertions. Further, it will be considered whether this test, in its present form, can become an instrument to be used in the everyday practice of clinical psychiatry, as the Binet test, or modifications of it, is used in psychometry.

In so short a paper no attempt will be made to outline either the history, the scoring or the interpretation. An attempt will be made to show, not how it is done, but what is accomplished. It might be mentioned, however, that the idea of interpreting casually created forms is not new. For many years the world has known that curious ink skeletons or ink ghosts can be made by folding a sheet of paper on which blots of ink have been scattered at random. Previous to Rorschach's work one finds in the literature such names as Binet and Henri, Dearborn, Kirkpatrick, Pyle, Starch, Whipple, Bartlett and Parsons, but it was left to Rorschach to develop the interpretation of ink-blot responses, and to establish norms by careful experimentation, the results of which were checked by case-histories and psycho-analytic material. In the midst of these researches, only a year after the publication of his only paper on the subject, Dr. Rorschach died, and the bulk of his experiments, with the conceptions based on them, was lost to the world.

The Origin and Standardization of the Test.

Before establishing his norms Rorschach did an immense amount of experimentation over a period of some ten years, but unfortunately, owing to his early death, we do not have a detailed history of this work. Even at the time of publication of "Psychodiagnostik" (1), he emphasizes the empirical character of the whole work. He adopts the attitude that the test is a psychological experiment and that his results are purely tentative. With reference to the usefulness of these findings, Rorschach says (p. 128): "The test was originally conducted on theoretical lines. The fact that the results of the test could be used diagnostically appeared by accident, and purely empirically. In that way the experimental test became an examination test. To begin with, the diagnostic application was used to control the results themselves. Then tentative diagnoses were made on patients unknown to me, after records had been made of them by my colleagues. The more accurate these diagnoses were—without regard to the age or sex of the patient, and whether he was healthy, neurotic or psychotic—the more certain was it that the method was a correct one". Rorschach's norms, given below, were standardized on 405 individuals, and these norms are taken as a basis on which all investigators work (p. 19):

	Men.	Women.	Total.
Educated normals	35	20	55
Uneducated normals	20	42	62
Psychopaths	12	8	20
Alcoholics	8	...	8
Morons, imbeciles	10	2	12
Schizophrenics	105	83	188
Manic-depressives	4	10	14
Epileptics	17	3	20
Paralytics	7	1	8
Senile dementias	7	3	10
Arterio-sclerotic dementias	3	2	5
Korsakovs and similarly diseased subjects	3	...	3
Totals	231	174	405

Rorschach does not state that the classification of the terms "debile" (moron), and "imbecile" were made on the basis of any intelligence test.

The Test Material.

The chance forms are constructed by scattering blots of ink on a sheet of white paper, which is then folded in the centre and smoothed with the finger; this is then pasted on to a square piece of cardboard. He states, however, that only certain designs so formed can be used, and lays down several conditions which must be fulfilled (p. 1): "Firstly, the forms must be comparatively simple. Secondly, the symmetrical placing of the blot on the sheet must fulfil certain conditions of 'space-rhythm'. If this is ignored, the cards fail to look like pictures, and the result is that many subjects reject them on the ground of their being 'simply ink-blots', and give no interpretations whatsoever". Apart from these general conditions, each picture of the series has several special conditions to fulfil. As each separate picture, and also the whole

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series, must be exhaustively examined before it can be fit for use, the compiling of a suitable series of ten pictures is not as simple a matter as might at first sight be expected. The pictures from the point of view of construction are symmetrical, with very strict deviations between the two halves. Asymmetrical pictures are rejected by a great many subjects. Symmetry gives a certain amount of rhythm to these figures.

The test material as now used, and on which Rorschach founded his norms, consists of ten symmetrical designs printed on white paper mounted on stiff cardboard. They are always presented in the same order. Some are in black and grey only. Others include various pastel shades of pink, orange, blue, greyish-green, etc.

The administration of the test is simple in the extreme. The patient sits with his back to the examiner, and the cards are handed to him, in order, with the question, "What do you see here?" or "What might this be?" It is often useful to explain how the designs are made, as time may be uselessly occupied by the patient attempting an explanation of their origin. Occasionally a diffident or suspicious patient may require encouragement; the examiner may say, for instance, "Most people see something". If the patient asks—and only if he asks—he can be told that the card may be turned at will, so that the design may be examined from all angles. Suggestion must, of course, be avoided, and with the average patient the examiner need say nothing, with the exception of the first question, until the test is finished. Everything said by the patient is recorded verbatim by the examiner, who notes also the position of the card, and the part of the blot interpreted. The total duration of the examination, as well as the time which elapses between the patient's receiving a card and his first response, should also be recorded. When the patient has gone through the ten cards, the examiner should revise each response, and question the patient, if necessary, and again without suggestion, to determine what elements he is justified in scoring later. The examiner, of course, must not say anything which may suggest any of these elements to the subject, *e.g.*, he cannot ask the subject "Is the whole picture an animal?" or "What part is the animal?"; rather he should say, "Show me the animal".

Having located the portion referred to, the examiner should next ask, "How do you know it is an animal?" If the answer is, "By the shape of it", the response is scored as "form"; or if the answer is, "Because it is green like a frog, and it has a frog's legs", then "colour" and "form" can be scored, and so on.

Classification of Responses.

Each response is then scored according to:

(1) Its mode of apperception, *i.e.*, whether the design is interpreted as a whole (W); as a detail (D); as a rarely perceived detail (Dr), etc.

(2) Its quality, *i.e.*, whether form (F); colour (C); shading (Fc); stereognosis (Ch); or movement (M) is perceived.

(3) Its content, *i.e.*, whether the response is that of an animal (A); human (H); landscape (Ls); botanical (Bo); object (Oj), etc.

(4) Its originality (O) or popularity (P).

After the responses have been scored, they are tabulated as follows, *e.g.*, from a case of schizophrenia-simplex:

Total Responses, 17.

Manner of apperception.	Quality of interpretation.	Content of interpretation.
W 0	M 0	H 1
dW 1	C 0	Hd 2
D 9	CF 0	A 9
Dr 7	FC 0	Ad 4
Ds 0	F 14	Ls 0
Do 0	F— 2	Bo 0
..	F(c) 1	Oj 0
..	..	F(c) 1

F% = 85.	Mode of apperception (Erfassungstypus) = D, Dr.
A% = 62.	Type of apperceptive experience (Erlebnistypus) = OC = OM.
O% = 0.	Type of succession—Stereotyped.
P% = 6.	Rejections, 2.

It is from the above summary that Rorschach forms the basis of his interpretation, to which, in its totality, Oberholzer gives the name "Psychogram" (5).

The English symbols used by the writer are those produced by Dr. F. L. Wells and Dr. S. J. Beck, of the Boston Psychopathic Hospital Psychological Laboratory.

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Scoring of Responses.

The scoring of responses is a matter of experience, and at present no hard and fast rules can be laid down. There is an insufficient number of detailed norms, and tables classifying responses actually obtained, to score all responses on a quantitative basis. Experimental work will, in time, accumulate a sufficient number of obtained responses to lay down some such quantitative basis, and the major difficulties of scoring will be over. Until then, each examiner must learn by his own experience, and this constitutes one of the chief hindrances of the general use of the test.

Interpretation.

Having administered and scored the test, one has accomplished by far the easiest part; for the interpretation of the Rorschach test findings is a difficult and somewhat lengthy process, even to those who have spent years in familiarizing themselves with it. Here, indeed, the Socratic principle, that the more one knows the less one thinks one knows, is appropriate, and even the recognized experts are somewhat diffident of making a diagnosis. Rorschach himself had developed the interpretation of the experimental records to an astonishing degree—one might almost say to dizzy heights—and anyone who wishes to see a vivid example of his skill should read the article which was published posthumously by Oberholzer (5).

There are a considerable number of cases which are admitted to hospital on the verge of, or actually in stupor. No matter how adequate the anamnesis may be, the psychiatrist will have difficulty in making a differential diagnosis between benign and malignant, depressive or katatonic stupor, and the prognosis is therefore in doubt. If the patient is able to respond at all, the Rorschach test will do much to indicate the seriousness or the benignness of the outcome.

Conclusions.

Except for the accumulation of statistical material, the test is of little value when applied to the chronic institution patient. The administration of the test, in such cases, takes an hour or longer, and the picture, clouded no doubt by stereotyped living and lack of mental activity, shows little but co-arctation and dementia. When mania or depression is marked the test is difficult to administer, but the diagnostic picture is usually clear, and telling glimpses of the dynamics may be obtained. In the organic group it is again difficult to administer during the acute stages, but is useful as a diagnostic aid.

The psychoneurotic group forms almost ideal material for the Rorschach test, no matter whether one proposes to direct treatment along psycho-analytical lines or not. Much is learned of the patient's conscious and unconscious processes, which can be interpreted as the psychiatrist sees fit. A very clear picture of the patient's personality is obtained, and treatment is thereby facilitated.

By no means can every case admitted to hospital be tested, because of the time which requires to be spent in administration and formulation of the psychogram (roughly five hours is spent on each case), unless the hospital has a full-time psychologist or psychiatrist who has no other duties. In its present form the test must, of necessity, be reserved for problem cases.

In the out-patient department, or in private practice, where the time for examining the case is limited, the test is of great value. It can be administered, in the average case, in about half an hour, and the psychogram can be formulated at the psychiatrist's leisure. When the patient next visits the clinic or the psychiatrist's consulting-room, the broad lines, at least, on which further investigation and treatment must be carried out will be known. On the other hand, the psychiatrist may prefer to carry out his preliminary investigations and treatment on more orthodox lines, and reserve the Rorschach test for such time as a deadlock may occur, through the patient running out of material, or through the psychiatrist being unable to decide on which lines to proceed.

In child guidance work, as one can judge from the work of Beck, Loosli-Usteri, Löpfe and others, the Rorschach test is found an admirable adjunct to diagnosis and index of the lines on which treatment should be carried out. In this work the patient is often too young to discuss his difficulties, and one welcomes any test which is of value in probing the emotional life.

Finally, it may be said that the test has far-reaching possibilities, but conclusions drawn from it, at present, must be guarded, and much painstaking work must still be done before it can be used with confidence. It is yet in an experimental stage, and those who work with it must understand clearly that their efforts cannot be used, at present, with the same certainty with which one uses the findings of the Binet-Simon, Kuhlmann-Anderson or similar intelligence tests.

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Discussion.

Dr. STEWART asked what was the effect of showing the same series of figures twice or more often; did the subject respond differently, or did he give very much the same interpretation each time?

Dr. HARDCASTLE asked as to the responses of a manic-depressive patient; how would his responses compare in the manic phase with those in the depressed phase? One felt that they should both be the same, and it was rather difficult to appreciate that they would be so in the two very different types of patient concerned.

Dr. TURNER asked whether the reader of the paper had had experience with this test in the case of mental defectives, or had he dealt only with mental patients?

Dr. LINDSAY referred to a test which had been employed for some time at his hospital, and which consisted in asking the patient to draw a man. If the patient was not expert at drawing, much valuable information could be derived from that drawing attempt.

Dr. MACCALMAN, in reply, said the study of the effects of a repetition of the series was something which would have to be undertaken some time in the future; it was a very interesting problem. Supposing one did this test when the patient was very ill, then did it when he was recovering, or when he was completely better, the question was whether the interpretation of the picture would change each time. That, so far as he was aware, had never been tried, certainly no sufficient series had been investigated. He would say one would see a very great change in the Rorschach picture. He thought the patient would have forgotten his responses in a month or so; in any case, he thought one would receive then a different set of answers altogether. The beauty of the test was that even though one were testing a trained psychometrist, he could not know what the examiner was trying to get at.

He had heard the objection raised to this test that there were too many sexual details in it, but he thought that only applied to analysts. One analyst friend was shown a card, and he said, "There is nothing here but sexual symbolism". Much depended on the way one saw them.

With regard to the manic-depressive group, he advised the questioner on this to read S. J. Beck's recent article, which gave a full description. The questioner (Dr. Hardcastle) had said the test ought to give the same responses in both the manic and the depressive phase. But he, the speaker, thought that one got an entirely different picture in the manic and in the depressive phase.

The series of blocks he had shown was the only one that had been standardized, though many other series of blocks had been used. It would be very interesting to invent a new series, but only after years of labour could it be standardized.

The test had been used a good deal for mental defectives, but he himself did not do much mental deficiency work. S. J. Beck, whom he had already mentioned, had published many results from mental defectives, and with them it was said to be very reliable.

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With regard to the question as to how the test would compare with patients' drawings, the latter should show similar results, since both the Rorschach readings and the drawings were determined by the patient's personalities.

A vote of thanks was accorded Dr. MacCalman for his address.

OBITUARY.

Theophilus Bulkeley Hyslop, M.D., C.M., M.R.C.P.E., F.R.S.E.

The passing of Dr. T. B. Hyslop on February 12 of this year marks the end of a most striking personality, and his popularity was testified by a large attendance at the memorial service held at All Souls' Church, Langham Place. The mourners included members of the various hospitals with which he had been associated, members of the artistic profession, and very many personal friends, some of whom had not seen him for years.

From his youth up he lived in an atmosphere of mental science. He was born on May 27, 1863, and was the third son of William and Margaret Hyslop, of Stretton House, Church Stretton. His father had the merit of rising from humble beginnings to become the proprietor of Stretton House.

"T.B.", as he was familiarly termed by all his friends, was educated at Perth, Birmingham, Oxford and Edinburgh (Collegiate School). He won prizes at all of these and entered the University of Edinburgh in 1880. While a student he was selected as a member of his year for the Student's Representative Council at Edinburgh, and at the Tercentenary Celebrations at the University in 1884—the year after his father died, by the way—he played a prominent *rôle* in organizing the reception of the foreign delegates, receiving several medals in recognition of his work.

He was greatly interested in Clouston's lectures, and during the two years after taking his degrees (M.B., C.M.) in 1886, he held successfully the posts of Clinical Assistant and Pathologist to that great school of mental science, the West Riding Asylum at Wakefield, Clinical Assistant to Bethlem Royal Hospital, Assistant Medical Officer to the Royal Albert Asylum for the Mentally Defective at Lancaster, and Deputy Superintendent to the Glasgow District Asylum at Bothwell. It was during this period that he also visited several asylums on the Continent.

In 1888 he was appointed Assistant Medical Officer to Bethlem Royal Hospital, of which establishment he became Resident Physician and Medical Superintendent ten years later, when Dr. Percy Smith resigned that office in order to take up consulting practice. He led a very active life while at Bethlem, and resigned that post in 1911 to follow the example of his predecessors and do consulting work "up West".

While Assistant Medical Officer at Bethlem he took his M.D. at Edinburgh (1890), and in 1895 he published an excellent treatise on *Mental Physiology*. It was written primarily for the psychological part of the London M.D., and it is strange that it never reached a second edition. It was also in 1895 that he became lecturer on Mental Diseases to St. Mary's Hospital in succession to Sir James Crichton-Browne. In 1897 he was appointed Demonstrator in Psychology to Guy's Hospital in conjunction with Dr. (later Sir George) Savage.

He obtained the Gaskell Medal of the Medico-Psychological Association in 1889, and for three years was examiner for that honour. He was also a member of the Library, Educational and Parliamentary Committees, and was on the Council of the Association. He interested himself in all sorts of societies intimately or even remotely connected with his life's work, and was on the Council of many of them, such as the Medical Society of London, the Neurological, Psychological and Harveian Societies, the Chelsea Clinical Society (President), the National League for Physical Improvement, the Christian Union for Social Service, the Parents' National Educational Union, the Union of Women Workers, the Child Emigration Society, the Society for the Study of Inebriety (President), the British Medical Temperance Society, and the National United Temperance League. I do not know whether he ever became a teetotaler, but for years he was a great anti-alcohol publicist.

About 1905 he began to conceive that the chief causes of mental disorder were such factors as "brain-fag", over-education, the worry and bustle of modern life, over-crowding, alcohol and noisy streets. About that time he wrote a sort of novel (*Laputa*) after the style of Swift's *Gulliver's Travels*, satirizing the customs of the day. He did a good deal of public lecturing along these lines, and there is a collection of his views on such topics in a large tome, *The Borderland*, which he published in 1924. When he was President of the Section of Psychological Medicine and Neurology at the Annual Meeting of the British Medical Association in 1910 he gave an address on "Occupation and Environment as Causative Factors of Insanity". As President of the Section of Psychiatry of the Royal Society of Medicine his address was on "Problems of the Future". These were mostly on the same lines, but his oration at the

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Medical Society on "Degeneration, the Medico-Psychological Aspects of Modern Art, Music, Literature, Science and Religion" was from a different angle, referred to later.

His contributions to Tuke's *Dictionary of Psychological Medicine*, the *Encyclopædia Medica*, Clifford Allbutt's *System of Medicine*, *Brain*, and the *Journal of Mental Science* were much more balanced, and on a level with his *Text-book of Mental Physiology*. It appears that in 1912 he published a book on *Psycho-therapy in Relation to Alienism*.

His chief contributions to the *Journal of Mental Science* were: "Sunstroke and Insanity" (1890), "Parotiditis in the Insane" (1890) (4 cases), "Pseudo-general Paralysis" (1896) (Alcoholic, Malarial and other Mental Disorders resembling General Paralysis), "Rarer Skin Diseases Affecting the Insane" (1900) (pellagra, etc.), "The Mental Deficiency Bill" (1912), "Anger" (1915) (mostly quotations from literature and a suggestion that anger is pathological), "Venous Stasis" (1922) (active and passive congestion of the brain as a common cause of mental disease).

From what has already been said, it will have been gathered that Hyslop was a prolific writer, and by no means an idler, yet we have still to refer to a host of activities in which he excelled outside his profession. Very few of us can ever have met anybody to approach him for versatility.

About the time when he was entering the University of Edinburgh he practised craftsmanship of all sorts, including tailoring and boot-making. He was a man of fine physique and took great interest in athletics, at which he won many prizes. At pole-jumping he became the amateur champion.

He was a splendid cricketer in all parts of the field. He was a friend of W. G. Grace, and at least once played in the same game with him. At wicket-keeping he was so expert as to have received in his early days the praise of that renowned wicket-keeper, Alfred Lyttelton. He kept up his interest in outdoor games until late in life. He played tennis well, and was scratch at golf; he wrote a book on *Mental Handicaps in Golf*. At billiards he was not only a master hand, but also such an enthusiast that through his influence his club ("The Arts") may almost be said to have become a billiards club.

As to the Arts, he took up music keenly while at Edinburgh, and conducted an orchestra there. He was a first-class pianist and violinist, and could play several other instruments. He became a composer, and wrote quite a lot of music, and some of his orchestral works have been played at Queen's Hall and at the Crystal Palace. He was on the Council of the Westminster Orchestral Society, and once deputized as Examiner at the Royal Academy of Music. At Bethlem he developed quite a good little orchestra from among the attendants and patients, which has only just ceased to exist. At times he would augment this orchestra to about fifty instruments with skilled musicians from outside and give first-rate concerts.

He also painted many pictures, here again excelling as he did in everything, and three of his productions possessed sufficient merit to find a place at the Royal Academy. He was, however, considered to be a much greater musician than painter, but he was a member of the London Sketch Club, and Surrey Art Circle, and he wrote a book on *Mental Handicaps in Art*. "Ortho-Artcraft and Glass Painting" did little more than give a name, unpopular among artists, to a device which had been known to them for some years. Being interested in this branch of art, he made a collection of pictures by mental patients, and in 1900 organized an exhibition of about 600 of these. He used to relate with glee that some of his own pictures were "spotted" as evident efforts of a mental patient, but we had to take this and many of his yarns *cum grano salis*.

He was also on the Council of the Pioneers, a society for producing original plays, and on one occasion, for our annual show at Bethlem, he dramatized one of Storer Clouston's books. The play was a great success. He wrote a small book of poems which, though not above criticism, were quite good in their way.

I remember that, when we were at Bethlem, he once took to sculpture, or rather modelling in wax, and produced several beautiful little things.

Hyslop sparkled with wit and humour and ready repartee, and his ability as an after-dinner speaker gained for him membership of the Omar Khayyam Club, of which he was President in 1921–22. The same qualities stood him in good stead as an expert witness in the Law Courts, but perhaps this is a matter regarding which we need enter into no detail.

With so much diversity of interest it will be rightly supposed that Hyslop made an enormous number of friends—so many indeed that he was obliged to drop some of them from time to time. Some were capable of understanding this situation, but it gave offence to not a few, through no real fault of his own.

It is often said that a physician is liable to suffer from that disease which has been his special study, and it may be said that, in his later years, Hyslop almost complied with this dogma. During the war he had an attack of functional paraplegia which was ascribed to air-raids. He recovered, but it aged him very much, and he was never the same man again. Almost ten years later he developed a severe tic about the face, neck and shoulders. He

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recovered from this also, but like his earlier malady it had the effect of ageing him, and about three or four years ago he retired from consulting practice, and went to live at his old home at Church Stretton. In the end he suffered from that terribly disabling disease, paralysis agitans, from which, of course, he never recovered.

Hyslop had the faculty of inspiring confidence in his patients to an exceptional degree, and he carried on a large and successful consulting practice at 5, Portland Place. He made quite a lot of money, but he was too generous to people in all stations of life. He had his meals at the Langham Hotel, where he scarcely ever lunched or dined alone, while he never turned a deaf ear to the poor. Indeed he carried the expenses of whole families of poor people who had no claim on him. The result was that he was insufficiently prepared for the "rainy day" which inevitably arrived.

On reviewing his life one cannot escape the conclusion that he was a very hard worker, yet he did not give that impression, for he never seemed to be in a hurry, and his customary facial expression was a smile. If he had been less versatile and had directed all his energies into a single channel, there is little doubt that he would have become a very great man indeed.

W. H. B. STODDART.

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8. All communications should be addressed to "The Librarian, Royal Medico-Psychological Association, 11, Chandos Street, Cavendish Square, W. 1".

Books Added to the Library.

The Hon. Librarian gratefully acknowledges the following gifts to the Library:

Presented by Dr. Hamblin Smith:

Marañon, G.—*The Evolution of Sex* (transl. by Wells, W. B.). 1923.
Kirkpatrick, E. A.—*The Sciences of Man in the Making.* 1932.
Müller-Lyer.—*The Family* (transl. by Browne, S.). 1931.
Chance, Janet.—*The Cost of English Morals.* 1931.
Medical Aspects of Contraception. Report of the Medical Council on the National Birth-rate Commission. . 1927.
Haire, N. (edit.).—*Proceedings, Sexual Reform Congress,* 1929. 1930.
,, (and others).—*Some More Medical Views on Birth Control.* 1928.
Goddard, H. H.—*Juvenile Delinquency.* No date.
Grimberg, L.—*Emotion and Delinquency.* 1928.
Willemse, W. A.—*Constitution-Types in Delinquency.* 1932.
Lange, J.—*Crime as Destiny* (transl. by Haldane, C.). 1931.

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Murchison, C.—*Criminal Intelligence.* 1926.
" Warmark."—" *Guilty but Insane.*" 1931.
Gordon, M.—*Penal Discipline.* 1922.
Hobhouse, S., and Brockway, A. F. (edit.).—*English Prisons To-day.* 1922.
Hart, J. K.—*Inside Experience.* 1927.
Rele, V. G.—*Bhagavad-Gita.* 1928.
,, *The Mysterious Kundalini.* 1927.
,, *The Vedic Gods.* 1931.
Adler, A.—*The Practice and Theory of Individual Psychology.* 1924.
,, *The Science of Living.* 1930.
,, *The Pattern of Life.* 1931.
Aldrich, C. R.—*The Primitive Mind and Modern Civilization.* 1931.
Alexander, M. F.—*Constructive Conscious Control of the Individual.* 1924.
Ash, E. L.—*I Am and I Will.* 1924.
Badley, J. H.—*The Will to Live.* 1931.
Bartlett, F. C.—*The Psychology of the Soldier.* 1927.
Bostock, J.—*The Neural Energy Constant.* 1931.
Bousfield, P.—*The Omnipotent Self.* 1923.
,, *Pleasure and Pain.* 1926.
,, and W. R.—*The Mind and Its Mechanism.* 1927.
Cutten, G. B.—*Mind: Its Origin and Goal.* 1925.
Dearden, H.—*The Science of Happiness.* 1925.
Elder, W.—*Studies in Psychology.* 1927.
Gilliland, A. R., Morgan, J. J. B., and Stevens, S. N.—*General Psychology for Professional Students.* 1930.
Gordon, R. G.—*The Neurotic Personality.* 1927.
,, *Personality.* 1926.
Herbert, S.—*The Unconscious in Life and Art.* 1932.
Hollander, B.—*The Psychology of Misconduct, Vice and Crime.* 1922.
Hollingworth, H. L.—*The Psychology of Functional Neuroses.* 1920.
Holmes, E. S.—*The Science of Mind.* No date.
Isbyam, I. C.—*Infinity and Ego.* 1930.
Kirkpatrick, C.—*Intelligence and Immigration.* 1926.
Mairet, P.—*A.B.C. of Adler's Psychology.* 1928.
Menon, V. K. K.—*A Theory of Laughter.* 1931.
Miller, N.—*The Child of Primitive Society.* 1928.
Mitchell, T. W.—*The Psychology of Medicine.* 1921.
Pierce, F.—*Our Unconscious Mind and How to Use It.* 1922.
Rank, O.—*The Trauma of Birth.* 1929.
Russell, B.—*The Conquest of Happiness.* 1930.
Saudek, R.—*The Psychology of Handwriting.* 1925.
Smith, T. W.—*An Introduction to the Mind in Health and Disease.* 1925.
Strecker, E. A., and Appel, K. E.—*Discovering Ourselves.* 1931.
Turner, J.—*The Psychology of Self-Consciousness.* 1923.
,, *Human Psychology as Seen through the Dream.* 1924.
Varendonck, J.—*The Psychology of Day-dreams.* 1921.
Stekel, W.—*Peculiarities of Behaviour.* Vols. 1 and 2. 1925.
Hollander, B.—*Brain, Mind and the External Signs of Intelligence.* 1931.
Terman, L., and Coe, C.—*Genetic Studies of Genius* (3 vols.). 1926–30.
Jacobson, A. C.—*Genius: Some Revaluations.* 1926.
Allen, A. H. B.—*Pleasure and Instinct.* 1930.
Bauer, B.—*Woman* (transl. by Jerdan, E. S., and Haire, N.). 1927.
Bousfield, P.—*Sex and Civilization.* 1925.
Briffault, R.—*Sin and Sex.* 1931.
Gallichan, W. N.—*Sexual Apathy and Coldness in Women.* No date.
Magian, A. C.—*Sex Problems in Women.* 1922.
Money-Kyrle, R. E.—*The Development of the Sexual Impulses.* 1932.
Rout, E. A.—*Sex and Exercise.* 1925.
Chesser, E. S.—*Health and Psychology of the Child.* 1925.
Pierce, F.—*Understanding our Children.* 1926.
Wittels, F.—*Set the Children Free.* 1932.
Cole, R. H.—*Mental Diseases.* 1924.
Hyslop, T. B.—*The Borderland.* 1924.
Mott, Sir F.—*The Harveian Oration.* 1925.

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Stekel, W.—*Conditions of Nervous Anxiety and Their Treatment* (transl. by Gabler, R.). 1923.
Yellowlees, H.—*A Manual of Psychotherapy.* 1923.
Bousfield, P.—*The Elements of Practical Psycho-Analysis.* 1920.
Brown, W.—*Suggestion and Mental Analysis.* 1922.
Kolnai, A.—*Psycho-analysis and Sociology* (transl. by Paul, E. and C.). 1921.
Somerville, H.—*Practical Psycho-analysis.* 1922.
Lewin, L.—*Phantastica.* 1931.
Bousfield, P.—*The Pathology, Diagnosis and Treatment of Functional Nervous Diseases.* 1926.
Sadler, W. S.—*The Truth about Mind Cure.* 1929.
Armitage, D. M.—*A Challenge to Neurasthenia.* 1929.
Williams, E. H.—*The Insanity Plea.* 1931.
Macarthur, J.—*Mental Hospital Manual.* 1921.
Hillyer, J.—*Reluctantly Told.* 1927.
"Anomaly."—*The Invert and His Social Adjustment.* 1927.
Katsainos, G. M.—*The Physiology of Love.* 1929.
Wittels, F.—*Critique of Love.* 1930.
Deely, P. J.—*Industries and Occupations for the Mentally Defective.* 1927.
Lapage, P. C.—*Feeblemindedness in Children of School Age.* (App. Dendy, M.) 1920.
Fortune, R. F.—*The Mind in Sleep.* 1927.
Barker, J. E.—*Miracles of Healing.* 1931.
Sigerist, H. E.—*Man and Medicine.* 1932.
Drinkwater, H.—*Fifty Years of Medical Progress.* 1924.
Various Journals.

Circulation of Journals.

The following journals are circulated from the Library:

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.
Journal of Nervous and Mental Diseases.
Revue Neurologique.
Archives of Neurology and Psychiatry.
Journal of Comparative Psychology.

"Sociorum Annales."

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November, 1932.

Those marked * passed with "distinction."

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Berkshire.—Bridget Ethna Costello, Lilian Rosina Deacon, Eleanor Maud Stanley, Alice Bonsall Wragg, Frank Clewley.
Buckinghamshire.—George Frederick Mannin.
Cambridgeshire.—Christopher Dinsdale, Lilian Edith May Read.

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Carmarthen, etc.—*Alfred Davies.

Cheshire, Parkside.—Margaret Walsh, Bridie Josephine Linnane, Genevieve Mary Powell, Bridget Cremin, Mary Anne Mullally, May Forrest Wheeler, Ernest Gill Gordon, Owen Herbert Jones.

Cumberland and Westmorland.—Eleanor Whitehead Carlyle, James Frederick Long, Thomas Matthew Proudfoot, John Parker Strickland, Joseph Lawrence Wise.

Denbigh, etc.—Morfudd Davies, Harold Jones, Thomas Gladstone Jones, Thomas William Sullivan, Henry Richard Vaughan.

Derbyshire.—Paul Taylor, John Patrick O'Brien, Ernest John Robins, Hubert Hill, Margaret Gibbons, Harriett Beatrice Francis, Hilda Margaret Bratby, Ida Gamble, Lilian Annie Scott, Hilda Chapman, Marion Anne Marshall.

Devonshire.—Margaret Jane Davies, Martha Hurry.

Dorset.—Clarice Popkin Sutton Frances, Hannah Lewis, William Dinsley.

Durham.—Thomas Argyle, Joseph Murray, Thomas Gibson, Norah Robinson, Hannah Mary Ayton, Theresa Warlow, Elizabeth Welford, Ellen Hughes, Annie Mary Stephenson, Sarah Ann Gill, Marjorie Ellen Robinson.

Essex, Brentwood.—Leslie Charles Abbott, George Frederic Clarke, Charles Cooper Dunn, Harold Joseph Hooley, Thomas Parker, Ingrid Kronberg, Hilda Patricia Warren, Rachael Martin Scott, Vera Alice Cole, Mona McIntosh, Ivy Alice Clark, Florence Eva Brockies, Florence Eva Emberson, Marion Florence Grace Tunnicliffe, Hannah Lois Salvage, Florence Winifred Coxhead, Josephine O'Shea, Edna Eileen Murray, Eva Montgomery.

Essex, Severalls.—John Arthur Singleton, Arthur Cecil Mann, Mary Hlei Whalley, Emma Irene Sulway, Mary Gwyneth Evans, Gladys Ethel Roberts, Christine Elizabeth Theaker.

Hampshire, Park Prewett.—Margretta Nelson, William James Patey, William Pitt, Maurice Simpson, Tom Heeley.

Isle of Wight.—Constance Medwin, Ella Louisa Long.

Kent, Chartham.—Mary Hart, Raymond Stuart Wiffen, Ambrose Lavin, Mildred Mary Clancy, Mary Ann Elizabeth Smith, Sidney Jones, Mary Elizabeth Hannaway, Eunice Gwendoline Lepper.

Lancashire, Lancaster.—Florence Bewes, Joseph Arthur Best.

Lancashire, Prestwich.—Miriam Ardern, John Norman Martin.

Lancashire, Rainhill.—Margaret Brockley, Jessie Mabel Holden, Phyllis Rotherham, Margaret Owen, Eric James Stott, Robert Willis, Ann McCormick.

Lancashire, Whittingham.—Elizabeth Nolan, Winifred Rigby, Margaret Watson, Jacqueline Abbott, Ellen Lackland, Robert Fazackerley, Barnaby Hothersall, Joseph Moss, Joshua Clegg, Donald Birkett, Thomas Wilson, Matthew Lowe.

Lancashire, Winwick.—Elsie Hughes, Hilda Holland, Annie Ratcliffe, *Catherine Hardman, Lilian Bird, George Banton, Jack Smallshaw.

Leicestershire and Rutland.—Margaret Winifred Herbert.

Lincolnshire, Bracebridge.—Elsie Covington, Dorothy Ada Bass.

London, Banstead.—James Cooper, Sidney Bird, Charles Dean, Frank Walter Oxley, John Stanley Wood, Bessie Frances Abbot, Helena Allen, Vera May Beavington, Elizabeth Bergin, Mercy Annie Bradley, Lilian Jones, Frances Sarah McFadden, Janet Mary Stewart, Lilian Florence Vizer, Helen Constance Williams, Susan Cameron Stoessel.

London, Bexley.—George Broughton, John Alfred Hunt, Henry Edward Lloyd, Thomas Neilson, Frank Innes Mosses, John Alfred Collins, John Thomas Horst, Percy Fowler, Alfred William Smith, Frances William Judge, Frederick Banfield, Catherine Gorman, Annie Hawkes, Lily Paulling, Lily May Jackson, Rose Ellen Carter.

London, Cane Hill.—Florence Katherine Mabey, Angela Ryan, Gertrude Overton, Helena Touhig, Vera Grace Collins, Henry Corner, Levi Joseph Garth, Albert Percy Jones, Edward Richard Lishmund, George Ernest Lobley, Douglas David Dawson.

London, Claybury.—Lilian Florence Rose Atkinson, Violet Agnes Beal, Charles Frank Bellis, Harold Edward Bennett, Edward Henry Careswell Blunt, Henry Chamberlain, James Edward Cunningham, Mary Bridget Hueston, Maggie Hoey, Marion Millicent Jackman, Tryphena Morgan, Mary McPherson, Irene Frances Newman, Ivy Lilian Oakes, Laura Pitts, Florence Emily Sillitoe, Davis Rees Southgate, Horace Rider Tyrrell, Hayes William Vincent.

London, Colney Hatch.—Kathleen Frances O'Mara, Dorothy Ann Richards, Gwladys Maud Harris, Mary Fanning, Alice West, Dorothy Vera Ward, Mary Emma Haynes, Louisa Easty, Bella MacQuarrie, Frederick Adolphus William Gould, James Arthur Hardman, Sidney Harold Charlesworth, Leonard William Edward Kilby, Henry Harvey, *Arthur F. Anderson.

London, Ewell.—Sophia Coutts Thomson, Dorothy Ada Welch, Annie Mabel Sharp, Hanna Keniry, Marjorie Lillian Biggs, Anastasia O'Callaghan, Charlotte Finnerty.

London, Hanwell.—Wallace J. Humphris, John R. Cooper, Stanley R. Sage, Albert E. Moul, Lucy A. L. Symes, Ivy P. Emery, Nellie Armitage, Annie E. Crane, Evelyn M. Chaffey, Evelyn

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M. Nicholas, Phyllis M. Hendy, Georgina L. M. Walker, *Amelia U. Wheeler, *Florence M. Frances.

London, Horton.—Bridget Stenson, Kathleen McGrath, Nellie Conlan, Mabel Hilda Bratley, Nora Elizabeth Clark, Bride Josephine Ivory, Margaret Florence McCann, Maud Louisa Brundle, Bridget O'Keefe, Margaret Madden, Edith Norris Parker, Mai Murphy, Emma Rastrick, May Annie Ellen Freed.

London, Long Grove.—Damaris Davies, Mary Irene Hughes, Rose Phebe Kaye, Mary Anne Kelly, Sheila Mary McCarthy-Murphy, Irene May Rowlands, Sydney Edgar Barwell, Robert James Henry Best, Edward Albert Charles Jaquest, Thomas Stanley Quarman, Robert Winter Short, Robert Cecil Scott.

London, Maudsley.—James Bishop.

London, Tooting Bec.—Arthur James Coad, George Charles Bartholomew, Percy Sutcliffe, Cyril Martin, Leonard Turner, John Smailes, William Henry Gardener, Sarah Abraham, Gwenllian Davies, Winifred Evelyn Edwards, Edith Pearl Smith, Evelyn Swinbourne, Catherine Doyle, Ellen Copeland, Mabel Cleife, Elsie Victoria Sarah Colwell, Julia Anne Egan, *Winifred Mary Guthrie, Margaret Elizabeth Ganderton, Rachel Annie Jenkins, Mary Alice Pointon.

London, West Park.—Queenie Cox, Mary Mawn, Gladys May Watkins, Mary Ann Bones, May Gwendoline Clatworthy, Gladys Crozier, Gwendoline Evans, *May Evans, Lilian Maud Robinson, Constance Grace Sircott, William Douglas Tickner Wand, Henry Sheldon, Peter Dawson Gibb Campbell, George William Ferry, David Llewellyn Harris, William Alfred Smith, Douglas Cecil Ridpath.

Middlesex, Napsbury.—Arthur Webb, John Alfred Butler, Harry Edward Frost, Annie Boyle, Elizabeth Walshe.

Middlesex, Springfield.—George Horace Wilfred Freeman, James Sydney Jones, Patricia Devine, Edith Emma Spray, Agnes Lucy Watts, Emily Taylor, Mary Cowan, Kathleen Cressell, Constance Jenkins, Margaret Sullivan, Ivy Ford, Kathleen Devine, Constance Lloyd, Ethel Woodhouse, Rita Sawtell, Ethel Ada Page, Doris Rose Hellyer.

Monmouthshire.—John Wright, Dorothy Gwendoline Pointon, Jean Madden, Minnie Waters, Ethel Maud Jayne.

Norfolk.—Dorothea May Burrage, Sarah Phyllis Hinksman, Mary Ellen Lintin, Elizabeth Annie Lambourne, Joan Audrey Riches, Grace Scuffell.

Northamptonshire.—Lilian Heron, Lily Lunn, Amy Wragg, Jack Lawrence Partridge.

Nottinghamshire.—Ruby Stringer, Elsie Hughes, Violet May Doubleday, Edith Annie Hastings Hall, Edith Emily Brooks, Frank Haigh, Albert Bates, George Smetheram.

Oxford County and City.—Frederick Oswald Smirthwaite, John George Clarkson, Wilfred Mawson Burn, Wilfred Murray, Jean Davis.

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NOTICES BY THE GENERAL SECRETARY.

Deaths.

Edward N. Brush.
Percy T. Hughes.
Theo. Bulkeley Hyslop.
Alan McDougall.

Appointment.

Handley, Richard, M.B., Ch.B., D.P.M., to be Medical Director, David Lewis Epileptic Colony, Warlord, Alderley Edge, Cheshire.

NOTICES OF MEETINGS.

Quarterly Meeting.—Wednesday, May 17, 1933, at 11, Chandos Street, London, W. 1. Maudsley Lecture by Dr. Adolf Meyer.

Annual Meeting.—July 5 to 7, 1933, at Clacton-on-Sea and Colchester.

South-Eastern Division.—Friday, May 12, 1933, at Leavesden Mental Hospital.

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VOL. LXXIX, NO. 326. JULY, 1933.

THE JOURNAL OF MENTAL SCIENCE

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THE

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No. 326 [NEW SERIES No. 290.] JULY, 1933. VOL. LXXIX

EDWARD NATHANIEL BRUSH.

BY the death of Dr. Brush, which occurred on January 19, 1933, America loses an eminent psychiatrist, and our Association one who had been an honorary member since 1902.

Dr. Brush was born at Utica, New York State, in 1852. He graduated in medicine at the University of Buffalo in 1874. Having spent four years in general hospital practice, in 1878 he joined the staff of the Utica Asylum, the oldest mental hospital in the State of New York. In 1884 he became Senior Assistant in the Department for the Insane at Pennsylvania Hospital. In 1891 he was selected as the first Superintendent of the newly-founded Sheppard and Enoch Pratt Hospital, Baltimore, and held this post until his retirement in 1920. He was also Professor of Psychiatry in the University of Maryland.

He was President of the American Psychiatric Association in 1916, and many other honours came to him during his long career. He is perhaps best known in this country from his literary connections. He joined the editorial board of the *American Journal of Insanity* (now the *American Journal of Psychiatry*) in 1897, and became editor-in-chief in 1905, holding this position until 1931. All readers of that journal know the high standard of excellence to which it attained under his guidance. After his retirement he continued to take an active interest in the journal, and he was engaged in consulting practice almost to the last day of his long life.

Dr. Brush was twice married. By his first wife, whom he married in 1879, and who died in 1911, he had a son (who follows his father's profession) and two daughters. His second wife, whom he married in 1914, survives him.

For the details of our deceased colleague's career we are indebted to our contemporary *Mental Hygiene*. M. H. S.

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THE HON. SIR HENRY ALFRED McCARDIE, KT.

The recent death, under tragic circumstances, of this eminent judge deprives the English judicial bench of one of its best-known occupants.

Mr. Justice McCardie was especially distinguished for his interest in medico-legal questions. He presided at the trial of Rex *v.* Ronald True, and his summing-up in that case raised questions of great importance as regards the vexed topic of " criminal responsibility ". Some years later, he presided at the second trial of Rex *v.* Thick. Both these cases were reported in the *Journal of Mental Science.*

There can be no doubt that Mr. Justice McCardie was a great judge. His summing-up in an important criminal trial was always a model of lucidity. He was invariably most courteous to medical witnesses. On many controverted matters, for example, that of abortion, he held strong views ; and he never hesitated to risk a temporary unpopularity by expressing his opinion publicly.

The deceased judge always took a keen interest in the Royal Medico-Psychological Association. He was Maudsley Lecturer in 1930, and his pronouncements on " Truth ", especially as seen in a court of law, were given wide publicity at the time. Apart from his extensive knowledge of the law, he was an ardent scholar, and he had wide interests in the field of literature.

He was the recipient of the honorary degree of Doctor of Laws from the University of Birmingham. He was unmarried. M. H. S.

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Part I.—Original Articles.

THE FOURTEENTH MAUDSLEY LECTURE: BRITISH INFLUENCES IN PSYCHIATRY AND MENTAL HYGIENE.

By Adolf Meyer, M.D.,
Psychiatrist in Chief, Phipps Psychiatric Clinic, Baltimore.

Delivered before the Royal Medico-Psychological Association on May 17, 1933.

It was with a deep sense of responsibility and of gratitude alike that I accepted the invitation to address you as your fourteenth Maudsley Lecturer; a sense of responsibility through the thought that, in a way, I come as a representative of American psychiatry; a sense of sincere gratitude for an opportunity to acknowledge a real personal indebtedness to British science and British medicine and British psychiatry, partly for what I received myself in the long years since my early post-graduate work in this country forty-three years ago, and partly for the influence British thought and work and practice has had upon certain developments, for which it is a pleasure to express our indebtedness and appreciation. Some of these relations and connections are little realized and little appreciated, and yet very illuminating and by no means only personal.

My direct indebtedness to your medical centres dates back to the year 1890, when at the age of 23 a spirit of inquiry and venture urged me to broaden my largely German-fed Swiss medical education by a semester with masters of French medicine—Potain, Brouardel, and especially Fournier, Pinard, the Déjerines and Charcot—followed by six months in the atmosphere of Edinburgh and London. In Edinburgh I had the privilege of working with John Wyllie, then a physician of the Royal Infirmary, keen on sound clinical methods, and probably best known through his work on speech disorders; Edinburgh also gave me a highly valued contact with Alexander Bruce, then beginning to make his mark in neurology, and to some extent with Byrom Bramwell, of specific note, both as general physician and as neurologist. And to be introduced by my warm friend Francis M. Caird to James Taylor, then Resident Physician at Queen Square, and through him to Hughlings Jackson, Horsley, Ferrier and Gowers, was indeed a great privilege for a young graduate. It was more than anything else the admirable account of the structure and function of the

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spinal cord in Gowers's text-book that next made me wish for an equally good grasp of the anatomy of the brain, to gain which I chose for my thesis work an investigation into the forebrain of reptiles, carried out in August Forel's department at the University of Zürich. Deeply impressed by the English-speaking world, I returned after further work in Vienna and Berlin, in 1892, to spend another fertile month in England and Scotland on my way to the New World. I was then determined to devote my life to comparative neurology and to clinical neurological work, which soon led me further than I had planned, actually into psychiatry, with which I had as yet little experience and little contact, beyond what the regular teaching of Forel and natural human interest had provided. Even in 1890 I had heard in Edinburgh the second of Thomas Clouston's Morison Lectures on "The Neuroses of Development". In 1892 I received a great stimulus from the Second International Psychological Congress in London—to me a very memorable occasion. At the Nottingham meeting of the British Medical Association in 1892, I was stimulated by Dr. Edwin Goodall's demonstration of cortex sections by Bevan Lewis's methods. At the British Association meeting in Edinburgh I saw Louis Robinson's demonstration of the grasping reflex of the newborn, on which research work has since been done with us at the Henry Phipps Clinic. A report to my Swiss *confrères* on the organization of the care of mental patients in Scotland, under Sir John Macpherson, was the first published sign of the direction my later special interests were to take, when, just forty years ago, on May 1, I became pathologist in the large hospital for the insane at Kankakee, Illinois. My gratitude is due to the Scotch and English friends and teachers—for they were real friends as well as teachers—and especially to Francis M. Caird, then still a young surgeon, whose personal warmth and cordiality won me over to a lasting attachment to the English-speaking world through ties which I sense more deeply than ever on this occasion. And, to-day I beg to express before you and to you my profound indebtedness also for this present opportunity, incidentally, I might say, to account in a way for the digression from the general medical and neurological training here received, to the fields of psychiatry and of mental hygiene.

I hope you will forgive the semi-historical and semi-personal bias of this presentation. The preoccupation with your invitation and with the present occasion has more than ever made me realize the rôle played in the synthesis of psychiatry and mental hygiene by contacts with British soil and British thought. This rôle becomes more tangible and more humanly intelligible as part of the life experience and development of the thought and work of a definite person than merely as an abstract impersonal statement. What I describe is the experience, I am sure, of but one among many—you might say "one clinical case"—and what personal element creeps into the statement is an unavoidable feature of any truly psycho-biological topic. It

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becomes more intelligible in human terms than as abstract factual or philosophical discussion.

I intend to single out and discuss (1) the genesis and meaning and importance of a psycho-biological rather than psycho-physical or psycho-physiological conception of man, and what this conception owes to British thought, and especially to Hughlings Jackson and Huxley; (2) the meaning of the resulting truly *functional* formulation of pathology, in contrast to the traditional nosological medical thinking, and the help derived from a psycho-biologically open-minded science; (3) the resulting interest in the individual, and the development of mental hygiene, with the interesting share of Henry Maudsley and Mary Everest Boole in an important phase of its initiation; and (4) some essential perspectives of present-day psychiatry and mental hygiene.

To the son of a Swiss Zwinglian minister and nephew of a medical practitioner, the problem of the nature of man, of mind and body and of their integration was not a mere abstract problem; nor was it altogether easy, or just casually treated; nor would it have shaped itself as it did without British influence. The early helps that happened to be available in my father's library were in the direction of the rigid psycho-physical trend of German science, as laid down in the works of two leaders who had both for a time been professors at the University of Zürich—Lange, the historian and critic of materialism, whose book gave me valuable historical foundations, but no working solution; and Wundt, Lange's successor, who in 1874 was called from the Chair of *Physiology* at Heidelberg to that of *Philosophy* at Zürich, but was soon called further to Leipzig, where he founded the first psycho-physical laboratory, and became the leader of German psychology along the lines initiated by the psychologically inspired physicist Fechner. Somehow both Lange and Wundt's essays had failed me in my quest for a satisfactory understanding of life and psyche—of what the philosophy of my environment and those speaking of psychology and psychiatry emphasize by the prefix "psycho", the soul and the soul concept, which I met in my extra-curricular browsing. I saw myself before a decision between theology with perhaps a philosophical and linguistic-historical preference related to my father's interests, and medicine with the possibility of a naturalistic career closer to the physician's world, as suggested by my maternal uncle. Eduard von Hartmann's *Philosophy of the Unconscious*, which I also found among my father's books, furnished me with the first live insight into basic studies of comparative-experimental physiology (in contrast to the elemental materialism reviewed by Lange), but also a provocative, critical review of human—supposedly idealistic—illusions, somehow without leading me into either agnosticism or pessimism. It offered a bold but vital philosophical presentation of a psycho-physical parallelism linking physiology and psychology together on a common functional ground, and it must have aroused in me a sense of real possibilities in naturalistic interests, since evidently its pessimism

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did not overwhelm me, as might readily have been possible from such reading during one's teens. The positive naturalistic interests won out in favour of medicine, but without eclipsing the problem of the psyche during the practical years of medical study. Even with my pre-medical and early medical interests I was too practically minded and too familiar with hypnosis, as viewed from the start as a simple process of suggestion, to be quite satisfied with Forel's strongly monistic but unduly neurologizing neurokyme formulation of hypnosis and mental function. It was a neurophysiological, psychophysical attempt at solution that still left me unsatisfied, especially under the peculiar subjectivistic wave of the later 'eighties, that struck even the physicists in the form of Kantian epistemology as revived by Mach. A much more decisive constructive step forward in dealing with the pertinent issues came to me through the reading of Thomas Huxley's essays and Hughlings Jackson's neurological writings, through which an important aspect of British thought came to exert a definite, more than merely epistemological, influence upon me. Huxley's vital contribution to the gropings and readjustments was threefold: first, his definition of science as organized common sense; second, his presentation of both the theories of Darwin and the critical philosophy of Hume, with a tendency to give a *biological* background to the human problem in a spirit less bitterly controversial than that of the more physiologizing Continental evolutionists Haeckel and Carl Vogt, and our Zürich botanist Dodel-Port (I also had found the Catholic theologian Frohschammer's very tactful reservations against a naïve non-critical espousal of Darwinism); and, third, somehow negatively, through a provocative and no longer negligible challenge, in his extreme version of parallelism which made of mind a mere epiphenomenon—a theory which later I had to reintegrate to get my full satisfaction.

The clue came to me through a provocative neo-Kantian article by Morton Prince in *Brain*, 1891 (vol. xiv, p. 250), on "Hughlings Jackson on the connection between the Mind and the Brain", describing Jackson's clean-cut concept of concomitance, free of interaction, while Prince identified the principle of consciousness with the noumenon of Kant. It stimulated me to follow up the earlier personal impression of Hughlings Jackson during my Queen Square contact in 1890 with the reading of his writings and those of Huxley, while I was also occupied with the anatomical and physiological and psychiatric preoccupations of that period and the simultaneous empiro-critical influences of Mach of Vienna and Avenarius of Zürich (through Carl Hauptmann's analysis of the concepts of brain physiology), and also of Riehl's philosophical criticism, brought to my attention by my friend Rudolf Martin, the anthropologist (and later greatly helped by Höffding's *Moderne Philosophen* [1905]). Huxley's use of biological (life-dependent) rather than strictly physiological (organ and structure-dependent) concepts and, on the other hand, his provocative use of the boldly parallelistic contrast "no neurosis

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without psychosis and no psychosis without neurosis", together with Hughlings Jackson's broad and inclusive concept of the hierarchy of evolution and dissolution processes, with a distinctive psychological level, called for correlations with my comparative neurological and neuropathological work, and my personal human interest in the causal efficiency of suggestion and mentation generally in psychiatric cases. The need of preparedness for practical medical life-work turned my attention to organismal and functional considerations, which, however, did not let me wipe out the mental functioning. In British thought there appeared as a rule a very definite biological comprehensiveness, in contrast to the Continental interest in the cell and the isolated organ, later also met in the contacts with leading American workers, who proved to be largely dominated by an overpowering influence of the German physiological school of Ludwig, and, in distinction from the English schools, somehow not particularly friendly to either neurology or psychology or psychiatry. Apart from Pavlov's later work, the only excursion of a Ludwig pupil into psychology and psychiatry was that of Flechsig, whose myelinization studies never made him a psychiatrist. Direct contact and work with genetic and comparative neurology, an experimental and not merely histological grasp on the data of the neurone concept, familiarity with Horsley's localizatory interests, and Hughlings Jackson's functional breadth and depth, all this began to blend and unify anatomy and physiology and psychology and actual practical life in a comprehensive biological setting, including also *all* those facts for which we have only psychological terms. It developed an orientation that later found itself on particularly congenial ground with the contributions of Sir Charles Sherrington, and especially with his concept of the integrative function of the nervous system, which coincided with my concept of the nature also of psycho-biological functioning as "*mentally integrated*". Having to do my first teaching in the Biological Department of the University of Chicago as Docent in Neurology (1893–1895), and from 1895 to 1902 before the graduate students of biology and psychology at Clark University as Docent in Psychiatry, may account in a further suggestive way for my giving psychiatry an inclusive biological frame. Biology and integration became natural resultants and integrators, with a satisfaction of doing justice both to human nature and to the demands of the sciences available in its study.

In the days of which I speak—the early 'nineties—psychiatry was just beginning to attract more than merely practical attention. It still was largely work with and in institutions, rather than medical work with special diseases and with individual patients. At that time it appeared, and in fact it still appears, to be a field somewhat disturbing, because it seemed to demand unusual talents of verbal formulation; and it is apt to be forbidding because even to-day it is almost unintelligibly obsessed by epistemological dogmatism. I remember that even in 1892 I definitely rejected the advice to take up psychiatry in Switzerland because I felt it required much more ability than

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I had for verbal expression, rather than opportunity for concrete demonstration through action. The methods and techniques actually used were *rapport*, understanding, advice, reassurance and guidance of activity and of fancy and emotional life, and suggestion or explanation, with or without hypnosis, and with or without reference to the beginnings of neurological localization initiated by Broca, Hughlings Jackson, Hitzig, and demonstrated and so vividly brought before me by Horsley and Ferrier and Henschen at the 1892 Psychological Congress. Neither the hypnosis nor the localization concept was primarily and especially introduced or developed by psychiatrists, or perhaps directly important for them; but as problems of correlation they formed a challenge especially under my energetic and critically aggressive teacher, Prof. Forel, the successor of v. Gudden and of Hitzig at Zürich, and in the British influences mentioned, and in Carl Hauptmann's critique of the brain-physiological concepts from the Avenarius angle—all of which played a real rôle in the efforts to find oneself philosophically, scientifically and humanly.

Somehow a really vital sense for the human individual or person was coming into its rights, and that especially through the English emphasis on biology in a scientific naturalism and the living unit, rather than an excessive assertion of selves of supernatural origin. Under the broadening contacts, man began to attain a biological naturalness approaching a pluralism rather than a Cartesian dualism with its parallelistic fear of "interaction". We no longer worked with a body that also happened to be complicated by a mind, or a mind that also happened to be hampered by a body. There was a growing sense of an intrinsic belonging together, notwithstanding the traditional contrasts, and a question why the terms "mind" and "soul" should continue to suggest substances or entities so disparate from the rest of our experience? Since that time there has been a steady urge for a unitary biological conception, with the result that to-day it is much more natural to think in terms of a live organism, the "he" or "she", or "you" or "I", asleep or awake, at rest or in action, in that "more or less" of a specific "state of function" we know as consciousness (comparable to a fluid "state of matter"). That the resulting conditions and functions had features not evident in the parts of the brain did not have to appear strange in a product of integration. We have come to speak of mind or soul as the person's *nature and function*, not as if we meant something detached; nor were we or are we necessarily overawed by the terms "mind" and "soul" as suggesting "things" rather than functions, as long as we see in them the kind of traditional language which we also use when speaking of sunrise and sunset, guided by practical considerations of relativity or relationism, and out of respect for tradition. We sense a *complete person* with flesh and blood, a product of growth, cerebrally and functionally integrated, an active entity, exhibiting what was spoken of by Charles Mercier even in the 'nineties as *conduct*, and later by William McDougall and others as *behaviour*. The subjective economizing functioning of this entity we then came to call

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mentation (*i.e.*, the minding-function) rather than "a mind", (or quasi-substance); while the term "soul" was used as applying to ultrabiological or suprabiological religious-eschatological relationships, perhaps with more of simple tradition and dogma behind them than a full and critical use of the really objective "facts"—the kind which would have to satisfy the demand of all science, *i.e.*, direct or indirect accessibility to the critical experience of all adequately trained and competent workers. There were beginnings of a naturalization of man, different from the schism of materialism and idealism and the old Cartesian contrast of body and soul, with the pineal body as the main point of contact of two worlds; a naturalization also different from a culturally destructive iconoclastic and aggressively agnostic materialism, and equally different from the later Watsonian behaviourism unnecessarily excluding subjective experience from objective consideration. There was no pejoristic tendency in such a conception as there would have been in a reduction to "mere matter", nor any exaltation as in a reduction to "mere mind". We were learning to see how the structural and functional segregation of receptor function and effector function provides room in the delayed reflex for the differentiation of that wealth of symbolization or contact of consciousness, *i.e.*, sign and meaning function, which allows us to incorporate all that which is accessible to the senses, imagination and memory, and equally that which consists in preparedness for action, as part of the attitude, reaction or action of the moment as well as of the personality, as spread over the lifetime, allowing us thus to consider the whole of man's nature, including his religious, moral and evaluating capacities. Man's sense, involving both sensory and motor function, came to appear as if in a *solution*, a time-consuming flux, in a flow of more or less content or differentiation of consciousness that stands simultaneously for the now and here, and the past, and the future, and for fancy and emotion and reason through the general inherent function of *symbolization*. Symbolization or sign function or meaning function begins to be more than a mere logical figure; it becomes itself the characteristic psycho-biological function and activity that we call mentation or "a mind" in varying degrees of overt performance.

In the 'nineties, to be interested (as psychologist) in what everybody (and not only the introspectionist closeted by himself) might observe and sense as objective reality, in another man's or one's own nature, was not yet done or accepted as practicable, yet the problem and ways of solution answered more and more affirmatively the question: Does not all this bring knowing and feeling and fancy within the range of our life function, of our *biological performance*? Or is it left outside? Why make a puzzle of it? Why not "go to it", study it for what it is and does, as behaviour, and as mentation or implicit function where it occurs as such, in the sense of meaning function, *i.e.*, something to be understood by its specific context, its causes and reasons and its consequences and bearings and suggestive significance? If too much

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dissection into sensations and neurones gets the facts too far from life, why not turn to the events that *are* life, a specific kind of order of meaningful function that will make experience telling and effective again if re-aroused (if we just take sufficiently telling developments), sometimes as a mere hint or thought, or fancy, or story or a dramatization, or a sufficiently obvious action in its setting? There is a sameness in essence, *viz.*, mentation or mentally integrated behaviour working with sign-function, the so-called content of consciousness, with definitely a "more or less" in degree from where it occurs as mere idea to where it is full-fledged action. Neither idealism nor materialism is illusion, they are mere contrasting emphases, each indicating specific biologically vital relationships, interesting to the inquirer. If *ideals* are present (and our concern as playing a rôle or as failing to do so), their presence or absence is just as natural and actual a problem of reality as that of the supposedly "purely physical" function or relation of our organismal being; they form more of a group phenomenon; moreover, ideals and all human doing, whether shown in thought and fancy or in plain action and reaction, will have to be viewed more as we view history, as a development in a life record, if it is to be understood, as a specific behaviour, or to use a Greek root, what I call an *ergasia*, a term for any mentally integrated working, constituting an *experiment of nature* fit for objective as well as subjective study. We arrive at a general habit and principle of all science dealing with function. Instead of puzzling, we want to know when and where the event, experience or function occurs or occurred; under what conditions and with what factors, with what working and effect, and what range of regularity and plasticity and modifiability.

We need a concept or conception of man that includes what in everyday practical life we recognize and know and feel man to be, to have and to do, as an organism or person with personality and personality-function or real human nature and conduct and behaviour. This activity of the person as a unit I call mentally integrated ergasia, using this new word in preference to "conduct" and "behaviour" merely because neither "conduct" nor "behaviour" lends itself to forming a plural or adjectives or compounds. Instead of a purely subjective detached mind, we find objectively observable performances or ergasias operative in the composure of sleep or in the height of human life and nature and attainment which one sees even in that life which Aristotle, in his Nicomachaean Ethics extols as man's highest attainment and condition for happiness, his "ἐνέργεια θεωρητική", or "contemplative activity".*

* Described in Chapter X as based on the nature of virtue, friendship and pleasure, as our greatest happiness and man's best personal functioning: "If happiness consists in activity in accordance with virtue, it is reasonable that it should be activity in accordance with the highest virtue, and this will be the virtue of the best part of us. Whether, then, this be the intellect or whatever else it be that is thought to rule or lead us by nature and to have cognizance of what is noble or divine . . . it is the activity of this part of us in accord with the virtue proper to it that will constitute perfect happiness; and this activity is the activity of contemplation, "ἡ ἐνέργεια θεωρητική".

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We see in it that which we might to-day call *our vision, our natural nature,* including our intuition and capacity for outlook, open to be studied as any actual part of nature and reality and actuality, as a functioning which a person either has or has not got. I am not afraid or disinclined to use common-sense terms such as the word *sense* as including both sensory and motor grasp and capacity, and the " story " of the situation, being more concerned with the working of the facts and but secondarily in the terms.

It is this type of being and this type of function to which we want to sensitize ourselves and the student and worker, through our personality-study and our objective psycho-biology and psycho-pathology.

These are conceptions which I am fairly certain would not have had an easy development on the European Continent, or perhaps later if I had lived only in America, without the influence of the British understanding of biology, that of mind, as not making of life and of mind something mysterious, but dealing frankly with living things to be accepted as found, and studied for what they are and do, without either dogmatic vitalistic obsession and/or dogmatic mechanistic arbitrary or negativistic limitation.

Common sense was naturally inclined toward such a practical and unifying attitude in a non-dogmatic Swiss atmosphere as anywhere else—I feel as if I never really could have thought differently; but when approached with scientific ambition in Continental academic thought, this really biological functioning somehow had to be harnessed in a physiologizing, actually psycho-*physical* parallelism, leaving us with a stipulation of merely ghost-like mental epiphenomena, a kind of shadow of the real man in action, with all the supposed horrors of a forbidden interaction. To-day we see it all much more clearly in terms of *psycho-biological integration*, as the integrative functions of the organism as a unit. J. B. Haldane also recognizes this integration concept in the nervous system, but does not extend it to the understanding of personality function, since he insists on stipulating three worlds—that of physics and chemistry, that of biology, and that of the mind; and he leaves them more as if they were superimposed layers or special detachable worlds, instead of sets of integrates, each higher integrate including the material of the simpler type, and constituting a product of differentiation and integration rather than mere addition of extraneous and possibly supernatural origin. Because the mentally integrated relations reach beyond the individual body and seem to imply exclusive subjectivity and eternal potentiality, Haldane seems to make too exceptional an issue not only of life, but especially of mind as ultra-organismal and as not just " naturally " conceivable, as unexplainable and as mystery—as if it were the duty and claim of " explanation " that it would account for the whole of new and specific existence or development by some kind of addition or extraneous origin. *Is* the way to be through the mystery of supernaturalism ? and if so, what kind ? Or is it rather to be through *organized sense*, and the granting to nature also of all the spirituality it has and grows with and attains ?

We deal with that which, in a definitely biological substantial and functional form, returns to-day not any longer under the negative mark of Huxleyan " agnosticism ", but in the positive concept of *integration*, developed also in General Smuts's holism, and in emergence, with the understanding, as Bertrand Russell states it, that " wholes have important properties not necessarily deducible from their constituents and the relations among these ". This specific integrational concept holds particularly for such facts as life and consciousness—so long made a puzzle as something " beyond human ken ". Attempts to meet data and questions of

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this sort played their *rôle* in my first paper on psycho-pathology and psycho-therapy in 1893 and in my first Clark University Lectures in 1895–6, and I feel that it started as plain common sense, recognizing steps, with a kind of *natural* discontinuity, but also natural progression, corroborated and accepted without mystery in Hughlings Jackson's concept of concomitance and the functional formulations of the data of observation, and later in William James's pluralism. Integration or unit-formation constitutes a natural principle, permitting the reduction of the data to a genetic-dynamic reconstruction as objective " experiments of nature ". We deal here, not with additions from the outside, but with differentiations with new specific categories. The greatest difficulty I have in conveying the result of natural conceptions is the widespread loss of faith not only in the supernatural, but in the natural as well, due to a false elementalism, and to the after-effects from exalted spirituality in feeling oneself giving up what seemed " all important " for something too long treated as insignificant, where, as a matter of fact, there is more gaining of active control than actual giving up.

Somehow in earlier German and French thought the idea of development and evolution had played a rôle that proved somewhat premature in the hands of keen but not naturalistically trained thinkers. It was based on the principle of plausibility, over-elaborate and dialectical, and with the German temperament it was destined to become a *Naturphilosophie, i.e.*, a system-formation running ahead of the facts or of experimental proof. A peculiar conservatism gave British thought that sober and critical progression from Baconian principles to the Darwinian method of collecting data, seeing and seeking long-term developments, with that world-embracing range of inquiry possible only to the trained traveller and collector not only of dead museum specimens, but also of events and their observations and records. It is easy to see how and with what results Germany and France developed their physiologists bent on physics and chemistry, and leaving man to the various philosophies and systems, and the English their physiology with physics and chemistry in natural biological settings. While German thought shaped its concept of parallelism as the way forward from Cartesian dualism, as a truce in matters of mind and matter and of man and nature, the thought of the English-speaking naturalists had in the *biological* principle a frame which did not make for a premature dogmatism and a premature rigidity, nor a demand for pan-psychologizing. It helped us to harmonize man and nature in a natural conception, without passing a large part of human nature to what would either belong to the realm of agnosticism, or at least to a segregated instead of an integrated world.

A good share of the problem of re-adjustment depends on the type of plasticity and dependability of the rank and file of the people. The English-speaking world has a record of stability and progressiveness in many directions. It has removed, within one century, one of the most deeply-rooted and tenacious mediæval creations, that of the duel, radically expunged from the British code of honour of manhood and of valour. When we come to freedom of belief, and to disposition to be hospitable and fair to new experience and new concepts, I am willing to give my confidence to the liberal tendencies—a biological social phenomenon or tendency of the first order.

I was strongly impressed by this inclusiveness and experiential preparedness having a sense for balance and correlation with normal phenomena in a problematic field when in 1892, at the Second International Psychological Congress in London, it frankly and inquiringly admitted the section for Psychic Research. To-day this plays a much greater rôle among Germans, in the same quarters which also gave biology the stamp of aggressive vitalism in Driesch, with all the German urge for system-formation and assumption of " psychons ", etc. Why can we not study human nature as we study nature generally ? Why not be prepared to determine where we find facts ? Is it because we are not willing or allowed to give Nature credit that we are willing to give only to powers from which we expect magic in a highly anthropomorphic sense, satisfying the human capacity for anticipation by symbolization and resulting wish ?

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In all this we owe a great debt to Hughlings Jackson—the foremost representative of those who rose to the principle which Spencer made the central thought of his philosophy, and which reflected British scientific thought and work from the middle of the nineteenth century. Hughlings Jackson's capacity for observation, his use of the principle of evolution and dissolution rather than of a narrower concept of structure and function, and his caution in the use of psychological terms and concepts, all put a premium on observation, of great importance, and especially natural under conditions in which autopsy could not be obligatorily practised. Jackson was the functional pathologist *par excellence*, whose work had to be, and could quite naturally be, supplemented by the experimental physiologists without perpetuation of a mind-body split, and was a real experimental psychology and ordinary common sense. His clearness in a recognition of several levels appealed to me. With my interest in structure I was prompted to give the Jacksonian formulations also a structural expression as far as facts permitted with structural experimental methods, and yet in the end with a functional anatomy of the nervous system, willing to accept a truly " functional organicism ", if such a blending of concepts is permitted. It *is* permissible—provided that we distinguish (physiological) part-functions and (psycho-biological) total-functions. My entrance into psychiatry was through the autopsy room, but with the temperament of the practitioner of medicine from my early clinical training, and through the functional thought of Jackson, supplemented by a frank acceptance also of the biographic relations of function or behaviour. I might sum it up in this way: Following up the stimulus from Gowers, and my earlier impressions from Forel and von Monakow and the Déjerines, put me in a mood or *capacity to assimilate a special structural, and at the same time also a functional orientation with a place also for the psycho-biological data or ergasias*, structural under the v. Gudden and Forel influence, and the impression of Roux's *Entwicklungsmechanik*, but definitely also with an open-minded interest in Hughlings Jackson's concerns and their application. In the psychological and general scientific orientation the influence of the empirio-critical philosophy of Hume, Riehl and Avenarius played a rôle. I agreed with Hughlings Jackson in keeping from loose identification of psychological and neurological data and concepts, but I saw a solution in the cultivation of objectivity in the field, also of psychology, and especially also in a need of a concrete and when necessary historical objectivity, rather than too complete a satisfaction with ever-ready analogy in either the post-Darwinian trend of British and early American psychiatry, or later in their ultimate, perhaps too exclusive and ready surrender to what, devoid of claims either to omniscience or to aggressive agnosticism, I consider as too mechanized and over-specialized, and too exclusive a " psychopathology of the unconscious ". We may easily run into the effects of too ready and final hitching of one's waggon to a star, which then, when adjustments are needed, makes the realities look pale, and invites the

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cultivation of a realm of the supernatural as extranatural, or as open only to analogizing inference from the unusual or pathological or the occult.

Binding oneself to be true to (1) structure when dealing with structure, and true to (2) structure-function when dealing with physiology or function of parts, gives free hand and free use of one's best experimentally tried sense in dealing also with a third set of relations, the total-functions and the intra-functional relations of the live organism, the individual, the person and the group, and therewith came a socializable objective psycho-biology and psycho-pathology doing justice also to all the objectively demonstrable subjectivity.

The subject is a natural object in a world of reality, calling for observation and formulation and obligatory test by re-observation or constructive experimentation open *to* and *in* thousands of others, and not only an introspectively accessible self, although with some of the valencies, as it were, closed in a subjective internal ring, comparable to the rings of organic chemistry. Charles Mercier's emphasis on conduct, and William McDougall's emphasis on behaviour —no other language has as good terms—were congenial developments giving an objective place also to subjectivity. The espousal of integration is in line with our having the courage of natural and Huxleyan and Baconian common sense, permitting the acceptance and study of experience or data as found in the formulation of man and his life and nature. It also gives a basis for a psycho-pathology and psychiatry, without a need of negatives and " un's ", and seeing spontaneity only as compensation for conflict and trouble ; and without John B. Watson's eliminating and telescoping of the sense for the historical-biological time-conscious method which is needed and used in psychiatry as in all study of mentally integrated organisms and their life. It favours a reduction of all the data to " experiments of nature ", with more and more of a *rapprochement* of the systematic constructive science of the laboratory and the factual observation and test and retest of a quasi-historical biological-biographic method, and with a sufficient tolerance for the provisional acceptance of facts as found, as long as we make ourselves responsible for a pluralism with consistency and readiness to seek and see the facts that give us new links and new groupings or integrations.

Somehow psychiatry is too complex and too important a branch of human endeavour to leave the personality-function to chance or to mere casual exploitations of unrelated facts and concepts ; to do better we need a natural understanding for the average human being as an organism or unit in function. It is not time lost to acquire this and to cultivate it. It is not immaterial whether we do or do *not* form a sensible and usable view of conduct or behaviour (or as I call it, concern for ergasias), instead of passing it on to dogmatic-dialectic traditional " metaphysics ", for which those who use it as *alibi* usually do not make themselves responsible. There is a " logic of facts in experiment " and a " logic of word and experience ", and finally a " logic of mere reasoning ".

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But it also is not wise to create either a superworld or an underworld of metaphysics with its iconoclasms and *autos-da-fé* and heresy trials. That which has lately led Charles S. Myers to speak of "the absurdity of a mind-body relation", similarly objects to the assumption that we should be just as happy with a ghost of a mind where we can meet a real person with all the flesh and blood that persons have to have; *i.e.*, a genuine integrate and not a mythological entity residing temporarily in a live corpse or soulless machine. It is not a mere fancy and play to establish a conception of the *meaning function* which makes man the being with subject-organization through symbolization; and it is not really a matter of indifference whether we do or do not form a working conception of the available facts. We call all that "fact" that does or can make a difference in our experimental formulations and tests, and our attempts to get close to reality and actuality, and in observation and experiment, *i.e.*, by letting the facts speak; and, in line with all the rest of science of objective data and relations, we study the "he" or "she" as the functioning integrate of structure, and that special group of functions that is humanly and mentally integrated. We accept a pluralism for whatever facts can prove themselves, including all the fancy and symbolization cultivated by the individual or group, as objective as well as subjective function, playing its rôle in the determination of the course of life.

Moreover, we need not think that nothing but the unusual or the abnormal is worth one's attention, any more than I should consider bankruptcy as the most interesting event of economics. Bertrand Russell is a keen observer when he intimates that man gets bored with what he knows. But is it not of the same order as the child gets "bored" with porridge and spinach? What and who makes us bored with the "ordinary"? Are we to be obligatorily infantile, or adolescent? How can we rise above it and avoid unnecessary distaste?

Anyone who does not sense the interest and individuality of even man's "ordinary" way of doing an ordinary thing should not pose as a student of man. No *absolutely* ordinary way of an ordinary thing *ever* occurs with such a highly individual being as the meaningfully functioning entity man. Here again we find intolerance of what is simple, leading to the creation of the "only thing that counts", and in turn to the disregard and pejorism for anything not directly of the order of the one star that shines. It is more than excusable that a student of physiology, *i.e.*, of structural parts, will want to forget the individual for a time in his experiment; he wants the privilege of studying structure-function; but a student of man, turning also to psychobiology, does not actually forget or cannot afford to forget the physiology, but rather will have to learn to think so naturally "physiologically", *i.e.*, essentially experimentally and dynamically and genetically, that he can turn as naturally to what is individual, personality function, function of the unit, the life-record and life-function of the "he" or "she", as naturally, I say, as the

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physiologist does with the part function which he wants to speak to us through his recording apparatus.

There is evidently a specific point to heed, resting on, but going further than, Jackson's conception and the time-shy science of the past. Man is bound to be a history-making creature, living in the budding of his natural time, his specific lifetime with its contrast to the physicist's space-time, with a capacity to be always in the now and here attitude, absorbing the past in memory, and what is not present in fancy, and with anticipation absorbing the future. One of our most critical thinkers, George Mead, who died last summer in the midst of the struggle with the verbalization of his *Philosophy of the Present*, had in his teaching the full sense of the almost inexpressible significance of " the present ", of the very essence of mentally integrated life, the meaning of the very moment of the *status nascendi* for which we have to be, and after a fashion naturally are, ever ready—the ever-passing now and here and what we bring into it ; not merely as a specially mechanized unconscious, but as " what " and " who " we are, and what we do right then and there when the vital events are happening, with a natural psycho-biological type of spontaneity and plasticity, and calling for our interest and positive and creative study.

To sum it up : We grant the right to use what we know in everyday life of the nature of man and the factors playing a rôle in shaping life's course in terms of psycho-biologically integrated functioning or ergasias, *i.e.*, those objective events including symbolization or meaning function in determining and constituting behaviour and conduct—in reality exactly that which the person of sound and critical intelligence uses in daily life as well as in the strictly scientific pursuits. This allows an orderly integration of the apparently heterogeneous sciences and data we meet in the study of man. We need a definite *place for the formulation of the " story " of the events in terms of an objective psycho-biology*—an acceptance not only of the structure-function of *physiology* (as it limits itself to the study of the functioning of detachable parts), but also of the total functions of the biological organismal unit or individual, the " he " or " she ", the organism as a person, in the service of its specific life-cycle, not merely as an addition of something extraneous, but as a differentiation and functioning containing all that is basic ; the physics and chemistry and the organization by growth and the products of life-experience. This makes of *mind a mode of subject-organization*, functioning without destroying the relations (attitudes, reactions and actions), actually developed and activated or operative ; it constitutes a biographic-historical and inter-functional and structure-functional reality record, using the best Huxleyan organized common sense, and freedom from obsessive puzzling and worries over interaction, and also freedom from supposedly " scientific " mechanization. We need a sound attitude toward the usual and the unusual, the normal and the less normal, what is structure-tied and habit-tied or more plastic ; open

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to study in terms of problems to be met and of the uses of assets and handicaps and resources of experience and creative activity. We learn to work with the physico-chemical and reflex conditions and functions, and with the flow of the more plastic meaning functions, or consciously integrated activity, the differentiation and building up of subject-organization and personality-formation and the type and range of preparedness for the now and here, for short-term and long-term adaptations and performances. In short, we deal with objectively formulated psycho-biology, with ergasias or performances or functioning of individuals and groups, operating with the help of or in the form of symbolization or meaning-function, subject to the same "reduction to experiments of nature" as constitutes all science of nature, including human nature and its working.

In the simple and direct words of the man in the street, objective psycho-biology occupies itself with performances, actions, reactions and attitudes, thoughts and expressions of a person or group, of sufficient importance to call for attention for the rôle it plays in the person's life, and to deserve being scrutinized for the conditions of its occurrence, the factors that enter, their working and their effects and results, and the range of their modifiability. This means that we need a balanced knowledge, sufficient to be able to foretell within reasonable limits what can be expected of the person in specific tasks and situations, and with regard to the individual's health, happiness and efficiency. And within this setting or knowledge it is the task of the observer (or of the subject, or both) to know how far he has to go into the distributive analysis to be in command of the facts for the understanding and management of the "experiment of nature".

British Share in Psychiatric Developments.

Turning now to the specific events in psychiatry, we have to remember that the 'nineties were the period when the English-speaking world let the urge for scientific methods in hospitals for mental diseases show in the introduction of laboratories as a supplement of usually unaided practice. Those were the days when Sir Frederick Mott, Ford-Robertson, Orr and Rows in Great Britain, Ira van Gieson in New York and some of us lesser known and less favoured beginners started their work. These men had their predecessors in the contributors to the *West Riding Reports* from which *Brain* arose—more or less contemporaneous were the rise of Meynert as a student of the cerebral cortex and brain generally, and also the rise of the Gudden school with Forel, Kraepelin and others. Frequent criticisms by outside physicians of the lack of productivity of the large hospital for the insane and a reproach of neglect of opportunity had played a rôle in this development. The need of a firm hold on the administration and all it

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involved may have been behind the interesting fact that the improvement was largely of the nature of introducing non-interfering talent from the outside.

In the United States it was usually the *post-mortem* pathologist who became an entering wedge of supposed science, and gradually also the clinical microscopist and the chemist. Others brought in the experience and methods of the internist, and still others the interests of the surgeon. The crux lay in the determination of points and means for harnessing the facts at work, or perhaps oftener the introduction of extraneous tests and methods, while the central facts, the study of the live patient, remained under the control of the administrative staff, in face of the fact that only a psychiatrist also a specialist will ultimately be the creative central factor.

The problem was then, and still may be, that of *where* one had best make one's attack.

Sir Frederick Mott came into the field with a record of work on the sensory pathways. His first volume of studies turned on the invasions of the brain by syphilis, his later interests were with the endocrines, but he paid as yet little attention to the data in the rank and file of psychiatric observation and work. His clinical interests were at Charing Cross Hospital and not in the asylums. Similarly, Ford-Robertson began with his interests in the conditions for pachymeningitis, *i.e.*, literally more the outside of brains and organism than the intrinsic workings.

Even Ira van Gieson, in New York, best known in actual productive contribution through his staining method and the demonstration of artefacts in the removal of the spinal cord at autopsy, expanded his Institute so as to represent a " correlation of sciences ", and included everything—except work with the living patients of the State Hospital. The McLean Hospital, made famous through the laboratory interests under Dr. Edward Cowles, who was inspired by the philosopher and psychologist Stanley Hall, an admirer and follower of the Leipzig physiologist Ludwig, had begun with research on the reflexes. Under Dr. August Hoch a study of the Kraepelinian work, curve psychology and the histology of the Nissl school were introduced, as well as Folin's studies of chemistry, but more and more, under Hoch, also the contact with the clinical study and treatment of the patient, which was still too jealously and narrowly kept in the hands of Dr. Cowles or the administrator. Our *Kankakee and Worcester plan* formed a contrast in that it started definitely from an organization of the rank and file of actual clinical work with the living patients as well as *post-mortem* and special laboratory studies, with more and more emphasis on the evolution of the disease as found, owing to a never-wavering interest in the specific " story " of the developments, the interest in the individual patient, and the biological point of view concerning both the nervous system and the clinical evolution of events.

It then was my good fortune in 1896 to spend six weeks of my first furlough

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with Kraepelin just at the time he brought out his revolutionary concept of dementia præcox in contrast to manic-depressive insanity. Kraepelin had been aroused by a false route taken by German psychologizing psychiatry, culminating in the appearance of Ziehen's text-book reflecting a tremendous extension of the concept of paranoia as embracing all disorders of the intellect. In his revulsion against the disregard of the course and outcome in such a grouping that throws under one term of intellectual disorder any simple delirium and also the most chronic paranoias, Kraepelin went just as far in extending his own previous tendency to an ætiological grouping of his samples of psychiatric entities when he combined Morel's and Kahlbaum's consideration of the course and outcome and his own theory of a specific group of " metabolism diseases " subject to deterioration in 1896, and pooled such heterogeneous conditions as general paresis, dementia præcox and myxœdema in his new group.

Therewith began the contest between Kraepelinian prognostic-nosological *versus* the non-dogmatic genetic-dynamic psychiatry. The whole chapter of " dementia præcox " loomed large in my experience and concern because of my preference for a legitimate but non-dogmatic procedure, *i.e.*, the reduction of its facts to an experiment of Nature. There is in this a conspicuous item on which I should like to give due credit to a number of vital contacts with British thought and work and teaching. In the first place, I did not ignore the fact that the condition did not occur in just any kind of person. Constitutional precursors of the actual dementia præcox were too obvious to be neglected. In my continental training the question of types of constitution had been neglected for the advances in the study of tissues and specific factors, such as infective agents. It was not until 1890 that my attention was first seriously directed to this problem. In a clinical discussion I heard Sir Thomas Grainger Stewart in Edinburgh give a more than purely archæological review of the temperaments, constitutions and dispositions. I have already mentioned that I also heard Clouston's second Morison Lecture of 1890 on the " Neuroses of Development ", with its interesting data stimulating the study of the special developments in growth and in the stigmata of degeneracy. And in the French school I had occasionally heard references to various diatheses. The problem of constitution asserted itself over and over again, and forced the issue of personality, and the life-experience in the attempts to understand the developments in the psychiatric patients, and the frequency with which specific and characteristic dispositional and also experience-determined and situational factors occurred as forerunners and apparently also as causal happenings. Three years before Freud's first communication, the urologist, Alexander Peyer, of Zürich, had published a small monograph dealing with frustrated sex-stimulation in anxiety reactions (*Der unvollständige Beischlaf*, 1890). Other developments, such as obsessional and dementia præcox cases, had fairly typical antecedents not to be ignored, but as yet hardly to be called the real " disease ". Kraepelin, more interested in his basic laboratory studies on the work curve

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and the effects of fatigue and the influence of alcohol and drugs thereon than in the history, and thereby the personality of his patients, had practically ignored, in his conceptions of dementia præcox, the constitutional and individual experience factor, which seemed to me paramount, and was one of the principal observations in my first communications on these questions, especially from 1903 on. When invited to take part in a symposium on dementia præcox before the British Medical Association in Toronto in 1906, I found my "Fundamental Conceptions of Dementia Præcox" perhaps rather sceptically received; it was published in the *British Medical Journal*, September, 1906. To Sir T. Grainger Stewart, and to the Huxleyan and Jacksonian biological viewpoint, which allowed me to integrate my common-sense experience with facts accessible to anyone, I owe a definite indebtedness for encouraging accidentally the constitutional link between common sense and science. I still have reasons to consider this paper, elicited by British medicine, the best I have contributed on the question, and on the general problem of genetic-dynamic principles in the determination of psychoses.

The paper was, however, apt to be misunderstood if interpreted as psychologizing in an old parallelistic sense or uncritical common sense instead of being taken for what it was—the upshot of an objective rather than merely subjective psycho-biology and a psycho-pathology free of any involvement in too exclusive a preoccupation with the unconscious, and without a separation of the mental and the physical processes, working much more in terms of a habit deterioration and disturbing determining factors than following any pattern like that of paresis (as claimed by Kraepelin, who, by the way, was not on any too sure a ground with his paresis diagnoses). With full attention to the *content of the story*, without losing sight of the organismal nature of human life, it was possible to avoid the fashion-like waves of diagnoses that had to be changed in the Kraepelin clinic.

About 1908 my friend and colleague E. E. Southard, also trained essentially from a pathological-anatomical angle, in the study of brains of schizophrenics thought he could, by palpation of the fresh brain, locate places of induration or of softening, and satisfy his Morgagni conscience, the question "*ubi est morbus*", in finding brain spots, which made him taunt me for insisting only on what he called mind twists. Later, my friend Cotton, who dropped dead ten days ago in the midst of active work, recorded his cures of patients by "defocalizing", without, to my mind, a sufficient cultivation of the total picture of the personality record and of what happened in the cures he reported. The last word may not be said on this point. In both these pursuits, and in the endocrinological contributions, I am ready to grant whatever can be gathered and used quasi-experimentally, provided all the facts are included. It is absolutely necessary to be clear on two points: speaking in terms of "function" does not in any way imply a fixed verdict as to the condition and rôle of the structure. If I have structural data and causal factors which can

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express the problem of management and description better than the functional formulation, I use the formula speaking in terms of structure. If not, I feel in duty bound to speak in terms of the facts I have, *viz.*, the behaviour function. There the question arises as to what is incidental and what is leading. If there are both structural and functional data, which then came first—the disorder in function or the disorder in structure? (If they are viewed as one, they would be what St. Thomas Aquinas tells us of the body and the soul—the result of one act of creation.) If they are additions or deficits of either function or structure, or both, we want to reduce the facts to terms of an experiment of nature, to be studied according to the basic formula of all science, *viz.*, (1) observation, (2) formulation, and (3) test of whatever is singled out. We thus come to determine (*a*) the topic worthy of note with a name or distinctive description; (*b*) the condition under which it occurs; (*c*) the factors; (*d*) the working; (*e*) the results; and (*f*) the modifiability and the search for the command over the events and opportunities. There are those who divide psychiatrists into two camps—the organicists and the functionalists; if they mean by the latter a disregard of structure, they are wrong in assuming this contrast in my own case. I never tire in searching for what I call structure-function and inquiry into structure, but also never tire in the formulation of the functional and situational data of the total picture. I want to be clear when I am dealing with demonstrable and workable facts and when with pure hypothesis. Southard's brain-spots have not been demonstrated adequately either in terms of their presence or in terms of their nature, or as a usable working hypothesis. The functional data *have* been, whatever their structural content may prove to be.

Sir Frederick Mott, as *post-mortem* pathologist with physiological training, and with clinical interests not centred in the patients of the asylum or mental hospital ward, was differently oriented. As mentioned above, like Southard, he also attacked the field of psychiatry from the outside, beginning his publications with the rôle of the syphilitic processes in the insanities, and expanding his interest in the direction of heredity and of endocrinology, so that at the beginning of the war he was more interested in the organic nature of shell-shock than its functional psycho-biological settings. Yet in the end, as far as the practical formulation went, our data concerning the general formulations of dementia præcox did not differ fundamentally, and in our conversations we were able to speak the same language with the same facts, although he claimed more for the gonadal findings than I was able to accept.

With the integrational concepts of man and the genetic-dynamic functional pathology and the respect for the content (or meaning) of mentation, with the recognition of the "symptoms" as facts of behaviour or ergasias, it was but a natural step to the concept of "reaction sets" or pathergasias—a psycho-pathology as behaviour disorders, not a strange terminology, but a simple use of the behaviour or ergasia or function concepts:

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The anergasias, with the memory and judgment defects characteristic of organic structure loss.

The dysergasias, or malsupport with but largely nutritionally disorganized disorders as in deliria.

The par- (or odd) ergasias, more or less disorganizing, frequently constitutionally, psycho-biologically and interfunctionally determined, including also the paranoias.

The thymergasias, the sweeping involvements largely of pure affects.

The kakergasias, or minor psychoses as " badly using oneself " (also called merergasias as part-pathergasia), not always sweeping (psychoneuroses) ; and—

The oligergasias or defective developments, closing the ring by leading over to the acquired defects again.

These groupings are definitely *not* meant as a classification of *patients*, but of pathological *principles* at work *in* patients, to be obligatorily specified according to the nature of the factors : exogenic, organogenic, neurogenic, psychogenic and constitutional.

There was no tendency to neglect anatomical histological studies of these days of transformation. A condition practically untouched by the German histopathologists even to-day had been observed by me in 1897, and soon after described as a special form of dementia by John Turner, and in 1901 fully recognized as a " central neuritis " (*Brain*, 1901, xxiv, pp. 47–115), which has since been clearly related to a nutrition deficit akin to what occurs in pellagra. For dementia præcox we have no similar data as yet. On the other hand, the same volume of *Brain* (xxiv, pp. 345 to 409) brought a study by Sir Henry Head, one of those characteristic masterly inquiries into the mental reactions related by him to referred pains and the discomforts in the average general hospital patient—a paper that should, in its broader significance, have become a much more noticed link between general medicine and psychiatry, and that contributed in my own psychiatric thinking to the growing tendency to use the experience with the normal and the minor disorders for the understanding also of more sweeping conditions. It was a stimulating British example of a link in the direction of using the common experience with average and special human nature in the understanding and investigation of personality disease, the same spirit which allows an open mind in respect to the rôle of life-experience so strongly emphasized by contemporary psycho-dynamic trends. The way was through a more intimate attention to the individual, the offering of possibilities in such provisions as the Maudsley Hospital or the Phipps Clinic, and the kind of concern so much stressed in the present-day liaison work between psychiatry and the other branches of medicine and the training of the medical student, in the work of Ralph A. Noble and Franklin G. Ebaugh. Responsibility for personality-function ceased to be the task only

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of the psychiatric specialty. It becomes a necessary and legitimate part of all medical work and education.

The Interest in the Individual and Mental Hygiene.

This brings us closely to the next question, namely, the evolution of the *interest in the normal or at least not definitely psychotic and its relation to what is seen in disease.*

A member of the Illinois Association for Child Study as early as 1894, and with a neighbourly though critical interest in Stanley Hall's life-work of child-study in Worcester from 1895 to 1902, I was constantly confronted with the evolution of constitutional factors, fully published in the *American Journal of Psychology*, 1903, xiv, pp. 90–103, in " An Attempt at Analysis of the Neurotic Constitution ". It was my urge to understand and guide, and not only to describe and dissect the patient ; I was also personally sensitized concerning the blending and differentiation of possible heredity and constitutional factors with definitely psychogenic, *i.e.*, life-experienced, and somatic ones on account of an attack of depression in my mother shortly after my emigration to the United States, and so I was bound to cultivate a very concrete and intimate concern for the genetic-dynamic developments in the individual patient and life-situations. From 1903 I had the active and sympathetic co-operation of a volunteer helper through her visiting the homes of my patients, and in her active interest in the therapeutic occupation and entertainment of the patients themselves. A proposal of Miss Louise Schuyler in 1905 to introduce the European, largely eleemosynary, after-care principles into the New York State Service, made it possible to add our experience with something forming part of the real pathology and therapy of psychiatry. It paved the way to a new venture, the appointment of the first official psychiatric social worker in 1906, and that of drawing practical consequences from the fundamental conceptions of dementia præcox, by asking, " What do the Histories of Cases of Insanity Teach Us Concerning Preventive Mental Hygiene during the Years of School Life ? " (*Psychol. Clinic*, 1908, ii, pp. 89–101), and various " after-care " studies. There proved to be as much need of extra-mural work on Fifth Avenue as on the East side of New York.

When, in 1908, Mr. Beers came to turn his energy to the reform of mental hospitals he was urged to do it on a basis of mental hygiene, which in due time proved to find an ally who brought in an additional link with British thought, in the entrance of well-directed lay spirit in sensing needs and opportunity—that of Mrs. Ethel Dummer, more strongly influenced by Mrs. Mary Everest Boole and by Dr. Maudsley's writing than may be generally known.

At the same time as the developments in the direction of social work and therapeutic formulation proceeded in our New York work, there developed in Chicago a vital determination to meet the problems of the juvenile court,

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also with a definite interrelation with a British help, through a contact between the inspired and inspiring and activating leader and a friend of Dr. Henry Maudsley. There was in Chicago a Juvenile Protective Association, interested in the Juvenile Court. Mrs. Ethel Dummer, the daughter of the lady who with far-reaching foresight had provided the funds for the first probation officers of the court, accepted service on the executive committee in 1907.

The development cannot be better stated than in her own words:

"I was shocked beyond measure at the realities of life revealed to me. To one brought up in an atmosphere pervaded by the Golden Rule, and in which life was largely pleasure and joy, the contrast of squalor, poverty and evil offered a problem which at one time I feared was wrecking my mind.

"My reaction was—These children are not bad. Any normal child deprived of all right opportunities would behave in the same way. There were, however, certain exceptions: A deaf-mute boy maturing physically, but lacking education, who was corrupting various groups as he went from one neighbourhood to another, and a few girls showing distinctly amoral behaviour, who at the time seemed far removed from normal mentality. There I found myself unable to condemn that which I had always been taught abstractly was evil.

"Perhaps my contribution might be said to be those months of acute suffering which preceded the establishment of the Juvenile Psychopathic Institute. Emotion is said to tend toward action. I can wonder whether the result is not in some way proportional to the keenness of the experience. The success of the clinic might so indicate in this case.

"In the midst of this wrestling of the spirit, there came in the mail a little book intended for another. It was *The Preparation of the Child for Science*, by Mary Everest Boole. In the preface, and later in her *Mathematical Psychology of Boole and Gratry*, her interpretation of George Boole's laws of thought illuminated the whole subject for me. He taught that for a complete judgment an alternating attitude of mind was necessary, that one must grasp whatever truth there was in the thought antagonistic to one's own, before being sure of one's position; that for any unit of discourse beside that which one held, or felt one knew, there was a field unknown, or held to be false. This one must understand before reaching the right decision, Boole's equation for this being X plus, not $X = 1$. Here I found that my withholding condemnation had been logical, not illogical, that my mind was following the right path.*

"This struggle carried me beyond all sense of good and evil and punishment. They appeared but as stages of development. The children were not to be helped by blame. The responsibility lay with those having leisure and intelligence to bring about better environment. The unsolved problem then was the atypical child. With this understanding came peace and courage, and a strangely keener consciousness, a new mental process. Recently this experience has been further clarified for me by Dr. William A. White in his hypothesis, that through conflict, higher integrations are attained.

"It is clear what happened. A dispassionate view was not possible without a change from terms of good and evil to one of understanding.

"Mrs. Boole had written, 'Progress occurs in crises, a crisis taking place when the science making most rapid advance turns its attention to the class of humanity most in need'. She prophesied twenty-five years ago that the next great step would be taken when psychology studied the criminal and the insane. Reading at the same time in Valéry-Radot's *Life of Pasteur* how one after another he discovered and controlled the germs which were ruining plants, animals, and at last

* It is the same equation which holds in my thinking of life in terms of units or wholes and of fractions.—A. M.

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man, there flashed into my mind—' In some psychological laboratory there must even now be at work the man who shall prevent much crime and insanity '. On making inquiry, I found that although progress was being made in the care of the insane, nowhere in the world was the atypical delinquent child being specially studied. My early attempts to persuade the Juvenile Protective Association that this was the most necessary step in their work in studying the causes of delinquency fell on deaf ears. I still recall the torrent of legal phraseology poured out upon me by Judge Mack, even after the establishment of the clinic, when I suggested that a wise physician, rather than a man trained in the law, would be of value in a juvenile court. However, my interest discovered others who were on the trail. A children's association, on whose board were Dr. Frank Churchill and Mrs. George R. Dean, desired a study of the atypical child, though not with delinquency in mind, and at last a meeting was called at Hull House, and a committee named to seek a man for the work. I had turned for help to Miss Julia C. Lathrop, the head of the Children's Bureau of the Government Department of Labour. She it was who acted as chairman of the committee to find a director, and it was her wisdom which selected Dr. William Healy, who already in private practice was showing marked ability with the atypical child."

The practical alternative at that time lay between the following-up of standardized statistical psychological research, as recommended by an interested university group, and the choice of a person closer to the facts as found. The choice fell upon Dr. Healy, and therewith came a realization much closer to the common sense of the situation than to a formal scientific approach in its narrow technical sense, such as was tried later in a much more expensive venture in an Eastern reformatory (see J. Widensall, *The Mentality of Criminal Women*, 1916).

The well-known basic work of Dr. William Healy and Dr. Augusta Bronner shaped its methods according to the facts and the goals within reach and open to action.

When, after the war, Dr. Thomas W. Salmon returned to his work as Director of the Committee for Mental Hygiene, there started those negotiations with Mr. Max Farrand of the Commonwealth Fund and later his successor, Mr. Barry Smith, that blossomed into the child guidance movement, in which England is to-day participating with its own practical contributions.

Mental Hygiene.

It may be that the term " mental hygiene " has been used in a spirit unduly comprehensive and somewhat tendentious, since Mr. Beers was urged to use it to give his lay movement, that of the National Committee for Mental Hygiene, a term carrying associations away from mere reform of psychiatric hospitals and mainly official legislative investigation, when we needed really constructive interests. As long as the director of the Committee was a psychiatrist, the functions of the Committee could be broadly psychiatric as well as humanitarian. Yet, as outlined in my report to the 1930 Congress for Mental Hygiene, there are in the title " mental hygiene " strong ambitions implied in the direction of something different from mere child psychiatry and a diluted general

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psychiatry—namely, an intimate study and public education in favour of those factors which make for mental health in a positive, creative, and not merely a passive or mending way. How little the medical leaders were prepared for such a view and for the fundamental work needed is best illustrated by the fact that the most remarkable and comprehensive creation of a medical research organization (the Rockefeller Institute), opened in 1903—and even the School of Hygiene of Johns Hopkins University, started in 1919—included no provisions for the study of personality functions and psychiatry, and even the nervous system as a major topic of concern, largely due to the parallelistic and mind-shy attitude of our leaders trained under the influence of the German school of physiology and pathology. (Or was it because of a realization that research in this field had to be carried on where the patients were ?). Similarly the National Research Council, founded in 1917 (with the Social Science Research Council and the Council of Learned Societies as the other national organizations for the planning and co-ordination of research interests), in its medical division, including all the specialities, had up to 1931 no representation of psychiatry, that field of medicine that maintains a larger number of public hospital beds than all the other diseases taken together—it is true on the cheapest possible level of expense and with pitifully little provision for progressive research. Mental hygiene had its beginnings in strangely isolated medical and scientific efforts and lay interests rather than under scientifically far-sighted support. It nevertheless was carried into action in a fairly effective way, first as after-care and attention to the social situations of patients and as child psychiatry or child guidance, and as a means of popularization of principles much needed when even general literature began to be flooded from not always clearly oriented propagandist quarters.

In these intensely human problems it is wise to avoid hair-splitting. We should only consider broader principles—in this case the emphasis on the constructive, preventive interest, in contrast to the essentially and primarily curative ones, which should be left in the hands or at any rate under the guidance of adequately-trained physicians. As a matter of fact both theory and practice prosper best where there is ample natural interpenetration. The fact remains that both individual and general preventive principles in professional and lay participation are bound to be a borderland of contact between all those interested in health, with or also without direct familiarity or preoccupation with what is to be prevented, focused more and more on what constitutes creative effort on behalf of health, happiness and efficiency. The freer the emphasis can be of reminders of pathology and therapy, the closer we are to what we should like to offer to practical life as mental hygiene, as personality and group guidance. On the other hand, it must be the ambition of a movement of this sort to reduce the widespread unwillingness to give simple and natural attention to ill-health and disease by eliminating morbid preoccupation.

In due credit to the medical world be it said that Mrs. Dummer had also been influenced by her family physician, who used to carry in his overcoat a volume of Henry Maudsley's *Pathology of Mind*, and would quote from it; she also read part of the 1895 edition of the work and made annotations; but the real impetus and understanding of Maudsley's and other British influences came to her in the language of Mary Everest Boole, more in harmony with the spirituality

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that characterized her bringing up and her temperament. Moreover modern psychiatry and conceptions of man appealed to her more through the emphasis on the interplay between the unconscious and the conscious and the intuitive aspects of life and education, than through any perhaps too exclusively naturalistic or even frankly common-sense type of views of man. We see here again how those who hitch their wagon to a star, to use Emerson's metaphor, are apt to be for life in need of the same spiritual and intuitional formulation ; and we also know that but few of those trained scientifically and medically emerge free from some stultification of their imagination when there is a question of human beings and human life in its real meaning. On the other hand, it is unfortunate that so many of those who follow a star, find such great difficulty in accepting again as worth while and as sufficiently real and necessary the facts that have to be sought and mastered, when intuition and revelation and elaboration of aspiring tradition fail to give us the facts needed for substantial achievement in the rank and file of reality. Why is it so hard to grant our best minds a start with which to use both feet and both arms and a clear and balanced head and personality and vision ? Is it not evidence that science cannot afford to disregard its obligations in keeping its contact with the neighbouring workers ? In this respect the masters of British science have set a remarkable example in their lectures and demonstrations to the man in the street. The difficulty in our own field lies in the fact that most of our data are far less novel than those in the sciences dealing with less generally known and practised matters. To make up for this fact by propaganda and lay discussion of hypnosis and psycho-analysis, and by popularization largely of pathology, is a serious question.

Mental hygiene clearly has its investigational and its educational emphases and goals in shaping attitudes as well as specific activities, and that for every period or phase of the human life-cycle.

Both the investigative activities and the inventive and propaganda activities can, to a large extent, deal with matters starting altogether from the health end, and the more this can be done the better. It is the ambition of the hygienist to think and speak in terms of the natural opportunities and resources of life with a balance in favour of the hale and whole conception of life, and without a stirring up of morbid fear by reminders of the threat of disease. Here, as in all human interest, balance insists on frank recognition of contrasts, but as good *and* evil instead of good *or* evil ; health *and* disease instead of health *or* disease. The conjunctive of choice in the language and thought of psychiatry and mental hygiene is " and ", not " or " or " but ". There has to be common ground.

In a field so fluid and dependent on the persons and the right combination of inspiration, training and practical support one hesitates to make pronouncements of principles. We deal here with a call for the soundest possible psychiatry and equally sound public opinion and ready adaptation to the necessities and opportunities. The more it can be part of the community, and the expression of real work, the sounder its theory and its practice. There are two ways of procedure that may readily be used side by side : on the one hand a systematic and well-balanced attention to the human (psycho-biological) health issues dependent on a sound evaluation and testing out of intuitions and emotions, and the peculiarity of individual organismal as well as the

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social contributing factors, with a practical accounting of the activities and their results; and at the same time a most thorough and critically constructive control of the strictly professional work, wherever possible pushing the possibilities of intensive investigation not merely as child study, but also as study of the share of the adult problems. This requires practical work carried on with a sufficient margin of time and encouragement to develop methods of intensive study and creative ventures. The goal must not lie in the direction of mere leaflets of instruction; and yet it should aim at such formulations as will favour well-directed thought and practice. Where there are as yet no ideal institutes combining practical work and freedom for research as we see it in the Maudsley Hospital and its laboratory division, one has to do as well as one can.

Hygiene has to deal to-day with a precipitous wiping-out of the distinction between child, adolescent and adult, and in so doing is working with reciprocities. There was a time when undue pressure was put on the child; letting up on this pressure not only in the child but simultaneously on the morals and institutions of the adult, who should not have to be spared, is creating new difficulties. Mankind is only too ready to be led; but it takes leaders of leaders to prevent more dissolution than solution. The hesitation concerning an unhampered experimental attitude in matters of human life must not be lightly thrown aside. Will the civilized world of to-day prove civilized enough to maintain the results of costly revolutions, and realize that human life is not a matter of mere thought and good intentions, but of actual time-consuming and time-requiring living? Will our civilization learn to take the time for growth and respect not only the space-time of physics, but also that specific though elastic quantity "life-time", adjusted, not to eternity alone, but also to the fact that we live by co-existing generations, and that facilities of locomotion and of communication of word and picture must not be expected to remove the laws of living in life-times?

We have to abandon any excessive cultivation of anticipatory as well as traditional *credit systems*. Neither the economic nor the spiritual credit systems of to-day have been equal to the pace created by one-sided progress in means of stimulation. Will a 30-hours a week programme take adequate care of the remaining 138 hours? Is life an industry? What is the relation of individual and group to industry? to salesmanship? to man's fate as consumer? to man as a shaper of opportunity? There will be no revelations merely from above. We have the choice of socialized or non-socialized dictatorships, or a pulling together of the elements that are able to listen to the language of reality. It would not do to translate Kipling's *Envoi of the Seven Seas* into our technical terms. Let us furnish the prose of word and deed out of which new inspiration can arise.

The greatest and most difficult task in psychiatry is that of balancing the concreteness and profuseness of its data, and what is needed to keep order among the mass of data.

Human beings have to face the fact of limitation of their capacity of attention and grasp and memory and resourcefulness in themselves, and in those with whom they have to work. Unless our *sciences can concentrate* and bring to focus as well as differentiate their data, their general effect with the average will be chaos or sham. We have to pay respect to the methods of gathering and digesting data as well as to their novelty and discovery. The art lies in

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one's being able to preserve concreteness and specificity and comprehensiveness alike, if possible without having to resort to systems too largely of inference and generalization. We have to honour and cultivate above all things a capacity to bring unity into both dispersion and concentration. This must not remain an abstract systematization. Our ambition must be to maintain and further centres of work with a good margin of time and energy for the digestion of the experience gathered and developed; work, teaching and research with enough leisure and order, but also adequate pressure, to make sure that the interests are clear enough to counteract distractions or mere dictatorial dogmatism. *Even the best can only be a sample of its own potentialities. The whole will never be more than the aggregate and the integrate of contemporaneous effort and outlook.*

The Future Within Reach.

We are to-day in a period in which we do well to consider concentration after a period of great expansion—a period of revision of excessive exploitations of credit. I therefore considered it opportune that we should take stock, and discuss the developments in psychiatry and mental hygiene in the light of a lifetime of experience and the trends and outlook of the present status and the future within reach, rather than speculations largely about eternity.

I am specially interested in the relation of practical needs and immediate possibilities, and the cultivation of records potentially valuable in not too remote a future—a future that is reasonably well planned. We cannot profitably indulge in experiments of perfection, nor will and shall the future be expected to live through all the details of the past. The past should be accessible, but if it is to function it has to be a usable part of the ever-progressing present.

From being a mere necessity and a cleaning-up of a terrible blot on the history of human welfare, or a dark corner of cruelty of nature and of man, the work with mental disorders has become a centre of unprecedented attention, sound only if cultivated with a good balance of the normal and less normal. In contrast to most of the other fields of medicine and hygiene, psychiatry has only rarely spectacular results to offer. Science still has to catch up first with centuries of practical and intuitional creativeness. This it is doing, but here again it should keep in advance of propaganda rather than be its servant. Psychiatry and neurology are not as immediately and as spectacularly helpful as sanitation based on Pasteur's simple experiment disproving abiogenesis, and on the arduous constructive work that followed. They deal with an organ, and with functions laid down for an individual's entire lifetime. Its problems and solutions operate in terms of generations, as well as in terms of preparedness to act to the best of one's ability in the emergencies of the now and here. To integrate the thoughtfulness and the actual work on these extremes requires

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stability and a foresight of unusual scope. The progress of mankind depends on it.

In the first place, we are prepared to be liberal in respecting a variety of sciences and not only one science. With sufficient liberality science can readily pay more serious and more practical attention to man and to things human. Instead of the mediæval interest largely in eternity, we do well to give scientific historical attention particularly to the fifty or sixty centuries during which records of culture supplement the palæontological finds of geology. We can thus focus on what may be possible within the span of contemporary generations. Besides the cultural interest of the study of language and the history of philosophies and of political and social life and education, there is a growing human interest shown in research into the use man makes of all these disciplines. This must be in harmony with the facts as they are, including also human nature and the way man uses himself and his assets. The awakening of a cultivation of "basic English" is not a mere whim of to-day. A study of the evolution of language brings us nearer to a history of psychology and of man-function than any other search, and that along two reciprocal lines: a biological account of the *verbal* differentiation of ergasia or mentally integrated function of man; and a possibility to trace, and to learn to avoid, many of the good and false leads passed on through language and in habits in our thinking concerning man and the rest of nature, and of the human opportunity of *using* thought as forerunner of action and creation. The study of linguistics and semantics as a part of the history, palæontology and evolution of human intelligence promises untold additions to our knowledge of man in his individual and social functioning, in the control and use of his discriminating tool, with a better knowledge of both form and content of what may become available. Logic is the science of reason in the use of the *logos*, of the word and of the verbal *sense*.

Then there comes the gain from the systematic study of man's development, from the differentiation of the fertilized cell into the adult being. So far science has sought and obtained means of study of the structure and the cultural results, too largely from bankruptcies, and with only meagre beginnings with detailed study of successes in the successive phases of individual and generations through which man passes, and which create one of the greatest problems for any civilization; the living together "side by side" of the immature and the mature and supermature, the young and the old, the cultured and the uncultured. These are but meagre beginnings of ways and means to secure and use and store the facts, not to speak of planned invention and creation, not by mere chance,, but with all the available organized common sense. This is where the Laura Spellman Rockefeller Foundation and the Commonwealth Fund have done remarkable pioneer work. And this is where pathology has brought much material, and probably also much premature theorizing. This is natural enough, because too little has been done to earn the confidence of the average person that would allow the willingness to make an open book of human life under conditions less prefixed than those of the psycho-analytic partnership of patient and physician.

What we have gained in our own generation is, to say the least, encouraging, and will be more and more so as man learns to live more on what is at hand than on credit, be it the credit borrowed from eternity expressed in religion, and terms that are intelligible to the child and to the person of limited endowment and opportunity and at the same time to the erudite, or the credit borrowed along economic speculation. The problem of credits is one of the matters the world has to straighten out; and it is here that the world is looking,

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not so much for a Moses, as for samples of development, and means of contact and comparison.

The study of the feeble-minded led to improved methods of teaching by Mme. Montessori and many others. The interest in degeneracy fostered the idea of eugenics, reminding us constantly of the inter-relation of individual and race. The study of the pathology of the living and the dead will, I trust, grow more contributive without turning the whole world into a pathological laboratory. Therapy is more and more interested in the powers of health. The interest in sin and crime has turned into a curiosity for more knowledge of the normal, with less confidence in baiting the devil. From preaching abstract psychology and abstract ethics and from treating human life as a meagre precursor of eternity, we have come to ask psychiatry and mental hygiene to help in filling gaps in our knowledge, and to assemble the experiments of Nature and of man in a way that allows us to put the samples before those fit to choose and to create a public consensus of opinion rather than dogma or dictatorship.

The world will always want to come and learn and to compare notes with the initiators of Magna Charta, of Bacon's experimental philosophy, of Shakespeare's dramatic genius. Those of us who have been favoured with visitors and co-workers from among you value highly what you bring to us in training and outlook. The United States is sometimes looked upon as an experimental ground, still behaving as the land of unlimited possibilities, but beginning to sense its limitations. We look to you as a country at work with all its cultural and economic and industrial and social and individual problems, with a liveable climate and soil, sufficiently varied and sufficiently harmonized races, and a fascinating blend of present-day practical sense and respect for the past and mindfulness of the immediate future. Those who know how to come and learn will always have cause and reason to cherish the contacts and the working together in well-proved personal and professional friendship.

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THE THYROID GLAND IN MENTAL DEFICIENCY: A HISTOLOGICAL STUDY.

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THE NORMAL THYROID.

THE thyroid gland has a profound influence on the mind, both in its emotional and its intellectual aspects. The emotional features of hyperthyroidism are too well recognized to need stressing. So, too, is the association between gross diminution of thyroid function and the mental incapacity of cretinism. It was suspected, therefore, that even in those types of mental deficiency in which diminution of thyroid function was not recognizable clinically, it might be possible to detect some evidence of abnormality in the thyroid gland by histological study. Further justification for presupposing the possibility of thyroid derangement may be found in the fact that in many conditions an association between the thyroid and thymus has been established, and that in mental deficiency the thymus undergoes premature atrophy.

It was in view of these considerations that the investigations, of which what follows is an account, were undertaken. These investigations represent a histological study of the thyroid glands of 90 defectives of both sexes between the ages of 1 and 19, who have died during the past 10 years at the Fountain Mental Hospital. The tissues all underwent similar treatment. They were fixed in 10% formalin in alcohol, embedded in paraffin and cut, and then stained with Ehrlich's hæmatoxylin and eosin. But certain limitations are to be noted in any study of such material as these sections. In the first place, the pieces of tissue appear to have been taken at random from any part of the gland, so that it is possible that parts which showed abnormality may have escaped observation. Secondly, the thickness of the different sections varied, thus increasing the difficulties of interpretation and comparison. Thirdly, though the reagents used were the same, they were applied by different people at different times, so that the staining reactions may not be strictly comparable. And finally, the clinical, and even the post-mortem records, as is so often the case in a retrospective investigation, are sometimes disappointingly meagre.

The material will first be dealt with in the light of the various histological

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criteria, and then, reversing the process, the histological features will be dealt with in respect of certain clinical aspects. Before attempting to consider pathological states, it is first essential to consider in some detail, by way of control, what constitutes the "normal" thyroid. It is here that serious difficulties at once arise.

Much of the gross anatomy of the thyroid gland was familiar to Galen; but his knowledge was allowed to lapse, and it was not till after many centuries that it was rediscovered by Julius Caserius or Leonado (Rienhoff (1)). Since that time it has been the subject of much study, and little has been learnt in the last two hundred years.

With regard to the microscopical anatomy, however, the situation has been entirely different. Early observers thought that the gland consisted of isolated vesicles; but many prominent histologists, among them Virchow, held that it was a tubular organ. It was not till the introduction of serial sections, combined with wax modelling, that it became possible to settle the question, and this was done in 1897 by J. J. Streiff (2), whose results corroborated the earlier theories. Unfortunately, however, the issue was complicated by the publication in 1923 of a paper by Williamson and Pearce (3), which purported to re-establish the tubular theory and combined it with certain original discoveries. On these findings they built up an elaborate theory of the working of the gland. But their observations were made on isolated sections and not on serial ones, and it remained for Wilson (4) in 1927 and Rienhoff (1) in 1930 finally to refute their views and to establish the true facts of thyroid histology.

Of these two workers, Rienhoff is the more satisfactory, in that he modelled a larger block of thyroid tissue, and combined this with the micro-dissection of the previously macerated gland. His conclusions were as follows:

1. That there is no true lobulation, the gland parenchyma consisting of continuous plates and bands which are only incompletely separated by the connective tissue.

2. These plates and bands consist of discontinuous follicles.

3. The follicles are spheroidal in shape with smooth outsides; no buds or branching exist. The number of small follicles is large in relation to the big ones. There is great variation in the size. Internally they measure from 0·02 to 0·897 mm.

4. "No epithelium except that which is completely differentiated, and also which presents the arrangement of the normal thyroid parenchyma, exists in the adult gland."

"The great preponderance of small follicles . . . in proportion to large ones, is suggestive, at least, that the thyroid tissue is completely differentiated in the adult, and after puberty the number of follicles is probably not increased by the growth of secondary vesicles from primary follicles. The small follicles would seem to form a reserve supply of parenchyma, which,

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when called upon to function, does so by an increase in size due to hypertrophy and hyperplasia of the epithelium."

Nor is this surprising when we consider the many factors that influence the histology, and the rapidity with which they may do so. In 1911, Marine and Lenhart (11) wrote: "The thyroid undergoes exceedingly rapid histological changes, the causes for which are still ill understood". Since then much attention has been devoted to these causes, and some at least of them have been elucidated.

McCarrison (5) has demonstrated the influence of polluted soil in producing the chronic hypertrophic type of goitre. He has also suggested that a lack of balance between the iodine and calcium in the diet may influence the gland. In his experiments, an excess of lime led to "an abnormal accumulation of colloid, secretory activity being in abeyance. The vesicles in whole or part of the gland were greatly distended, distorted in shape and their walls much thinned".

Not only calcium and iodine, but other food substances have been held to be responsible for structural variations. McCarrison (whose work was confirmed by Marine) produced hypertrophic goitre by feeding on an excess of iodine-free fats, and showed that if iodine were given simultaneously, no such goitre resulted. But that factors other than fats are involved is suggested by Bensley (6), who showed that the thyroids of captive opossums "lose their colloid and undergo hyperplasia which can be produced or controlled by diet alone". That this is a different phenomenon from McCarrison's is shown by the fact that iodine would not prevent the change. Further evidence of the effect of diet is adduced by Chalmers Watson (7), who showed that a diet of bread and milk in wild rats produced shrinkage of the vesicles and diminution of colloid, such of the latter as was left losing its affinity for eosin and appearing faint and granular. The effect of iodine was not observed, but the fact that these changes were regressive rather than hyperplastic suggests that they were of a different nature from those produced by Bensley and McCarrison. A meat diet produced proliferation of epithelium and degeneration of colloid. Recent work by McCarrison (8) suggests that the influence of diet on the thyroid is greater than has hitherto been suspected. He has shown that goitre can be produced by a relative excess of certain substances such as iodine-free fats and lime, and conversely, by relative deficiency of iodine or phosphorus if too much calcium is present. There are, in addition, certain "positive goitre-producing" foods, such as cabbage, ground-nut, maize and bran; and certain anti-goitrogenic factors in green vegetables (other than cabbage), oatmeal and carrots. Insanitary conditions can induce goitre only with the help of a defective diet.

He has drawn attention to the protective function of the vitamins. Vitamin A protects against the goitrogenic agent in "diet", and against the unknown agent in lymphadenoid goitre. Vitamin B is of doubtful potency,

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but seems to protect against the goitrogenic factor in ground-nuts and, perhaps, in cabbage. And a deficiency of vitamin C causes enlargement of the thyroid, with the accumulation of iodine-rich colloid.

Besides the age of the individual and his diet, sexual activity plays its part. The gland of the adult female resembles that of the male, but during pregnancy, and perhaps during menstruation, hyperplasia is found (De Quervain (9)). In the female, but not in the male, the relative size of the thyroid is greater during sexual activity than it is when the sexes are separated (McCarrison (8)). Sexual emotion has been held by Dunhill (10), following Langdon Brown, to be a prominent causative factor of thyrotoxicosis; other forms of mental stress doubtless play their part.

As an active accelerator of metabolism (11), the thyroid "excites about 40% of the total heat production of the body" (Hadfield and Garrod (12)). It might therefore be expected that the increased call for metabolism experienced during cold weather or during fever would affect it. Roger and Garnier (13), examining thyroids from cases of many of the acute exanthems, constantly found cellular proliferation and desquamation with absorption of colloid and occasional hæmorrhages.

Whatever the factor influencing the gland, as Hadfield and Garrod (12), among others, have pointed out, the histological evidence in different parts of the same gland may vary very greatly. What they write of the sequence of events in the hyperplasia of primary thyrotoxicosis is probably equally true of other hyperplasias: "It is probable that when the maximum degree of hyperplasia is attained by one group of vesicles, it is regularly followed by some degree of involution, and that this cycle, as in simple goitre, is repeated many times, ultimately ending in exhaustion and fibrosis. The histological picture owes its complexity to these changes, to the fact that the cycle is at different stages in many groups of vesicles at one time, and the size of these groups is very variable".

Instead, therefore, of searching for a somewhat chimerical normal as the basis of investigation, I propose now to consider each different histological feature, as to its significance in general, and as to its occurrence in this series. But as far as the histological assessment of activity or rest is concerned, these conditions, if they are capable of definition at all, are best considered according to the criteria specified by De Quervain (9). "Activity" he writes, "is suggested by—

"1. Cylindrical form of epithelium.
2. Tendency to formation of papillæ.
3. Irregular vesicles deficient in colloid.
4. Colloid badly stained, vacuolated or reticulated, staining preferably, but feebly, with hæmatoxylin.
5. Considerable desquamation.
6. Great frequency of mitochondria.

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" Rest is suggested by—

" 1. Squamous shape and flattening of epithelium.
2. Absence of papillæ.
3. Circular-shaped vesicles.
4. Colloid homogeneous; intensely stained by hæmatoxylin or by eosin, or by both. Complete absence of colloid in other cases.
5. No desquamation.
6. Few mitochondria.

" The value of these signs is not by any means uniform. A malignant goitre may exhibit an increase of mitochondria and other signs of activity, when actually its function may be very deficient."

The normal gland, then, in the adult, consists of closed vesicles of very varying sizes. The largest may be nearly fifty times the size of the smallest, though " these extremes are rarely seen together ". There are very few empty vesicles (Joll (14)), and the majority contain non-granular colloid (Hadfield and Garrod (12)), which takes a bright red colour with eosin (Kauffman (15)). The parenchyma lining the alveoli is low cubical, or low, but not frankly, columnar (Hadfield and Garrod (12)). But even syncytial masses of epithelium have been described by Hertzler (16), who says they resemble tissue in the placenta rather than ordinary gland epithelium. Between the alveoli, lying in a scanty fibrous stroma, are masses of cells which give a fallacious appearance of solidity, and are in reality the edges of normal alveoli (Rienhoff (1)).

Thus far only the adult gland has been considered. But it seems not unlikely that, in view of the well-known influence of the thyroid on growth and metabolism, the histological characteristics might differ somewhat in the gland of childhood and adolescence.

De Quervain (9) has recorded the fact that at birth there is no colloid; hyperplasia is the rule. Up to the age of 5 years this latter feature declines, and colloid storage makes its appearance. Thereafter, the hyperplasia again becomes conspicuous and may progress till it overshadows the colloid storage. With the onset of puberty the picture varies with the sex: in the male, storage of colloid is evident, in the female, hyperplasia. Cooper (17) has made a detailed study of the thyroid at different ages, but she gives no particulars either of the sources from which her material was derived, or of the number of specimens on which she bases her conclusions. It is perhaps for these reasons that Joll states that " it is doubtful whether all her conclusions are justifiable ". In brief, her findings are as follows: At the age of one year the vesicles vary only slightly in size, and are lined by cubical parenchyma without evidence of hypertrophy or hyperplasia. Colloid is present in most of them. Solid masses of parenchymatous cells between the vesicles are conspicuous, and the stroma is scanty. About the age of 5 years differentiation into alveoli is clear, though many are irregular or very small. The most conspicuous feature is " piling " of the epithelium, which tends to be columnar

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in shape and many layers thick, occasionally being actually embedded in the colloid, which still fills the alveoli. The cell masses are conspicuous and push the vesicle walls in; young vesicles are forming among them. In "older children" the gland is "similar to exophthalmic goitre". Many vesicles, especially those in the middle of the gland, are empty; the peripheral ones are large and full. The parenchyma cells are tall and columnar, piling is marked and desquamation common. The cell masses are many, large and highly vascularized, and the connective tissue is obscured.

Another author who stresses the occurrence of the cell-masses in the glands of children is Hertzler (16), who appears to regard them not as solid masses of normal parenchyma, but as a tissue of separate identity; for he writes that "the large number of interstitial cells is characteristic of the gland in childhood", and further that "in infants it is impossible to distinguish the acinal from the interstitial cells. Even in the earlier years of life the distinction is not clear".

Apart from the conflicting views concerning the identity and significance of these so-called cell masses, my two main authorities seem to agree that for the first few years the gland is in a state of colloid storage and shows little cellular activity. Towards the age of 5 colloid becomes less conspicuous, and hyperplasia predominates increasingly, and then tends to diminish after the onset of puberty.

In reading published accounts of thyroid histology, and still more in studying a series of specimens, I have been chiefly struck by the very wide variations in structure that may be encountered within the bounds of normality. This aspect of the question, which seems to have been somewhat overlooked in the earlier literature of the gland, has been receiving more attention recently. Joll (14) confesses that "great difficulty has been encountered in determining the range of normal histological variation", while Hertzler (16) writes, "it is important to note that there is no definitely established normal".

The Histological Characteristics.

The Vesicles.

As has already been described, the size of the vesicles may vary very widely, without exceeding the bounds of normality. In this series, however, no extremes were met in any one section, though very small and moderately large ones were often seen close together. None showed the typical appearances of the "fœtal" type of gland, though No. 10, from a female imbecile, who died at the age of 3 of broncho-pneumonia and rickets, approached it. Here the vesicles were small and regular, often with an only just distinguishable lumen and seldom containing any colloid; the epithelium was cubical, and the stroma abundant and pale-staining. In only two other

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cases did the alveoli seem to be particularly small. One, No. 36, was from a male microcephalic, who died from what was probably a terminal meningitis at the age of 2; the other, No. 51, was from a female secondary imbecile, who died of broncho-pneumonia at the age of 10.

At the other end of the scale, the fact that most of the alveoli appear more or less large is not to be taken as itself a pathological feature, but probably simply indicates the fact that at one time or another colloid storage was a predominating characteristic. Nine specimens showed an extensive, if sometimes patchy, largeness of the alveoli. In two of these, Nos. 48 and 83, the epithelium was flattened, the stroma was scanty, and the vesicles were uniformly and quite considerably distended with hyaline pink colloid, so as to give the appearances of a colloid goitre. The history of the second case was quite unknown. The only suggestive feature in that of the first was a course of treatment by " polyglandin ", but this is probably without special significance, since the preparation was being used for a good many cases at the time. Moreover, the gland was not enlarged macroscopically. The origins of these specimens with large alveoli may be tabulated as follows:

TABLE I.

No.	Sex.	Type.	Age.	Cause of death.
20	Female	Diplegic imbecile	15	Asphyxia.
37	,,	Primary	3	Pneumonia.
48	,,	Mongol	2	Nephritis.
83	,,	Primary	11	Influenzal pneumonia.
22	,,	,,	13	Carditis.
17	Male	Mongol	5	Phthisis.
38	Female	Paraplegic	12	Carditis.
35	,,	Secondary (toxic)	2	Broncho-pneumonia.
87	,,	,, (epileptic)	4	*Status epilepticus.*

In the first four of these specimens the gland was full of colloid, in the last it was exhausted. It will be seen that no constant feature connects the type of case with distension of the vesicles.

As regards the outline of the alveoli, it will be remembered that Rienhoff disproved the existence of buds in the adult gland. Some workers, however, notably Isenschmid (19), have maintained that growth by budding is a normal event in the glands of childhood. In this series, pronounced irregularity was almost always due to papillary formation, and the lesser degrees, being almost certainly the product of tissue shrinkage in the course of fixation, do not merit separate consideration. One case, however, No. 62, from a female cretin, æt. 7 (Fig. 1), showed appearances strongly suggestive of the breaking down of septa and the fusion of adjacent alveoli. In three others, Nos. 54, 74 and 68, the irregularity seemed too pronounced to be simply the result of tissue shrinkage, and looked more like the product of irregular growth. The first was from a male primary imbecile, who died at the age of 6 from scarlet fever

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of six weeks' duration. He was remarkable for the long, downy hairs all over his face, especially the temples, cheeks and upper lip. The second was from a male mongol, æt. 5, who died from broncho-pneumonia of three weeks' duration, but in whom there was no evidence of a hormonic dyscrasia. In both cases the testes were undescended, but this feature was seen in many in whom there was no evidence of increased growth of thyroid alveoli. The last was from a simple primary imbecile, æt. 8, who died of pneumonia. His thyroid was enlarged, but no other abnormality was noted.

If budding were a feature of the young thyroid, it would almost certainly have appeared clearly in this series; but it did not do so. Apparent irregu-

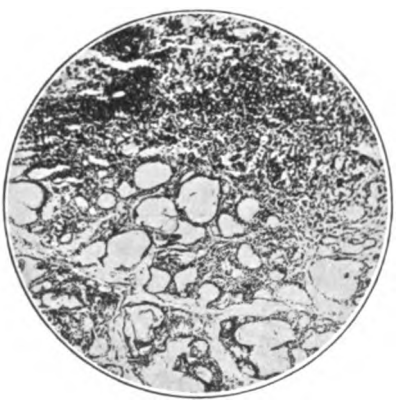

FIG. 1.

larity of the vesicles may be due, not to the epithelium itself, but to the growth of the stroma which was found in both the above specimens. Fusion of alveoli is very rare, but may occasionally occur.

The Colloid.

It may not be out of place to consider here briefly the function of the colloid, as a guide to its significance as a histological criterion. At first sight it might appear that colloid and secretion are identical, but this view has long been in doubt. Marine writes, "The colloid within the vesicles of the thyroid is believed to be the only vehicle for storing the active secretion in an inert manner". This view has received wide support, and Bensley (6), using a special fixation and staining technique, claims actually to have shown a true secretion differing from the colloid and lying in vacuoles at the peripheral end of the cell. Further confirmation comes from a biochemical source, for thyroxin can be isolated from the gland by proteolytic digestion—a fact which suggests that thyroxin exists in the gland in combination with a protein.

The colloid, then, probably represents the thyroid secretion in an inert

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form. Its presence would indicate excess of supply over demand, its absence, exhaustion. But such assumptions are weakened by two well-known pathological observations, namely, that in both secondary thyrotoxicosis and in cretinism, conditions in which the individual is in the first case using, and in the second demanding, much thyroid secretion, there may be an abundance of colloid present. Consequently, although Joll (14) is probably right in asserting that very few empty follicles are found in the normal gland, too much importance should not be attached to the mere presence or absence of colloid in assessing the activity or otherwise of the thyroid tissue.

In this series, taking a tissue approximately half full of colloid as a mean, 14 specimens are found in this group. Besides these, about equal numbers seem to occur in either side, that is to say, that 34 seem to be more than half-full and 42 less. In these are included 14 in which the colloid uniformly distended the alveoli, and 11 in which it was entirely absent. If these two extreme groups be again tabulated, it will be seen that no constant factor emerges in either, since in both may be found children of both sexes and a variety of ages, both fat and thin, who died from acute and chronic illnesses with and without fever. The same types of deficiency appear in both series. It may be noted that in only one of the colloid-free specimens, No. 87, were the vesicles so enlarged as to suggest that at another time it might have fallen into the group of specimens with much colloid. Even so there is nothing except the presence or absence of colloid to make the two groups real.

Not only did the colloid show variations in quantity, but its staining reactions were by no means constant. In one specimen it would be represented by a dense hyaline eosinophil substance; in another its consistency would be the same, but its staining affinities different, since it would be coloured mauve by the hæmatoxylin. In yet a third group its consistency would be the prominent feature, since instead of being hyaline it would appear granular, and this type was nearly always mauve and rarely eosinophil. As far as the staining reactions are concerned, the differences might appear to be simply the product of variations in the technique of staining. Such an explanation is put out of court by the fact that in a number of cases both types appear simultaneously, either in the form of a central eosinophil mass, or as a zone of pink to one side of, or (less commonly) surrounding, the mauve substance. If these specimens are put through a variety of stains, it is found that two types of colloid can be distinguished. The first type retains Gram's stain long after it has been washed out of the rest of the tissue, stains orange with Mallory's stain, and blue when treated with eosin and methylene-blue. The second kind has a very weak affinity for Gram's stain, stains blue with Mallory's aniline-blue-orange-G stain, and pink with eosin and methylene-blue.

These two types of colloid correspond to Types I and II already described by Hewer (18), who examined the fresh material of 16 glands removed at operation, 13 being cases of Graves' disease and the remaining 3 from other

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TABLE II.—*Specimens with much Colloid.*

No.	Sex.	Age.	Type.	Cause of death.	Nutrition.	
11	M.	12	Juvenile general paralytic	Pneumonia	Wasted	—
15	F.	5	Primary	Gangrene of lung	,,	—
20	F.	15	Secondary (diplegic)	Asphyxia	,,	—
37	F.	3	Primary	Pneumonia	,,	Four months' fever.
40	F.	7	,,	,,	Fat	One day's illness.
47	M.	10	Secondary (hemiplegic)	,,	Thin	,, ,,
48	F.	2	Mongol	Nephritis	—	Treated with polyglandin.
52	M.	2	Hydrocephalic	Broncho-pneumonia	Wasted	—
56	F.	10	Congenital diplegic with hydrocephalus	Inanition	,,	—
59	M.	4	Microcephalic	Pneumonia and fibroid lung	,,	—
60	M.	6	Secondary hemiplegic	*Status epilepticus*	Plump	Undescended testes.
70	M.	6	,, ,,	Diphtheria	,,	—
83	F.	11	Primary	Influenzal pneumonia	—	Two days' illness.
86	M.	9	,,	Phthisis	Wasted	Undescended testes.

TABLE III.—*Specimens with no Colloid.*

No.	Sex.	Age.	Type.	Cause of death.	Nutrition.	
3	F.	4	Mongol	Broncho-pneumonia (six days)	Thin	—
14	M.	7	,,	Pneumonia and measles	,,	Undescended testes.
19	M.	1	Microcephaly	Bronchitis and ? syphilis	Wasted	—
34	M.	4	Mongol	Generalized tuberculosis	,,	—
50	F.	13	Primary	*Status epilepticus*	Thin	—
54	M.	6	,,	Scarlatina	Wasted	—
61	M.	5	,,	Acute phthisis	,,	—
75	F.	8	Cretin	Pneumonia	—	Treated with thyroid.
80	M.	5	Primary	Phthisis	—	Testes undescended.
85	F.	10	,,	Pericarditis	Thin	—
81	F.	4	Secondary epileptic	*Status epilepticus*	Fat	—

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forms of goitre. Her conclusions were that the "type of staining is directly correlated to activity as determined by microscopy and clinical history, but not by the basal metabolic rate; the alkaline colloid (staining blue with Mallory's stain) indicated 'marked activity'; the acid (which takes the orange-G) indicates 'secretory inactivity'. Fresh secretion stained faintly, old deeply; and the reaction was found to be independent of the iodine content".

The very sharp contrast between these two types may be seen in Fig. 2 from No. 12, which shows a section stained with eosin and methylene-blue, though unfortunately the photograph does not bring out well the chromatic distinctions. Unfortunately, only 9 other specimens could be put through

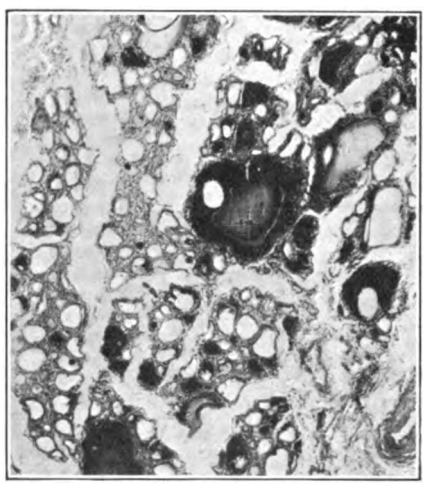

FIG. 2.

the full range of staining, but these were enough to show a wide variety in the distribution of the two types of colloid. As may be seen in Fig. 2, the alkaline type may occur alone, the acid alone, or the alkaline in the middle of the acid. In others, but less commonly, the acid might be found in the middle of the alkaline. The association usually seemed haphazard. The only specimen in which this was not the case was from No. 62, a cretin, in which a small area of the alveoli at the centre of the gland was full of acid colloid, while the more peripheral ones contained the alkaline form. As far as consistency was concerned, the acid in these cases was always hyaline, but the alkaline might be homogeneous or granular, and often both of these were found in the same section.

What, then, is the meaning of these two staining reactions? Is their significance only apparent, the product of a chemical change in the course of the preparation of the tissue? Or does it represent two different types of

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thyroid secretion, or is one a stage in the development of the other? If the acid and alkaline colloid depended on the fixatives, the appearances should be the same in each specimen, since all were treated alike. Instead of this, one is alkaline throughout, one is acid in the middle, and in the others the two are mixed, apparently at random. Moreover, the transition from one kind to another is abrupt and not gradual, as it would be were it the product of chemical action during preparations. Since the appearance of different secretions is not purely artefact, it might be that one is the precursor of the other. Is one the protein basis with which thyroxin is combined, possibly for purposes of storage? This possibility is disproved by Hewer's demonstration that the iodine content is the same in both types, for a protein menstruum would scarcely contain iodine to the same extent as the thyroid secretion. There remains the third possibility that two thyroid secretions can be thus demonstrated, and in view of the improbability of other explanations, this seems to me the most likely, though there is as yet no evidence to show whether this duality is normal or pathological. Hewer's specimens were from glands that were known to be diseased. In this series there was no record of clinical abnormality, nor are the associated microscopical features consistently pathological. That two secretions should be produced by the normal thyroid is an old and not a very surprising postulate. One can imagine that in response to one kind of stimulus the thyroid might produce a quantity of alkaline secretion. Then, before this is entirely absorbed, a different stimulus might result in the production of an acid secretion that would surround the alkaline. But such an explanation will not account for other forms of distribution, *e.g.*, where the two occur alongside one another, nor for the fact that though associated the two are never intimately mixed.

In the following table particulars of the 10 specimens in which the appearances were worked out are given. In it the colloid quantity is roughly indicated by the number of plus or minus signs, three of either being the extreme of storage or emptiness respectively. The percentage figure after these signs represents a rough estimate of the proportion of this colloid which is alkaline. The degree of activity is assessed according to the degree of epithelial hypertrophy or hyperplasia.

TABLE IV.

No.	Colloid.	Percentage alkaline.	Activity.
12	±	40	Slight.
16	++	80	Moderate.
20	+++	100	Pronounced.
22	++	80	None.
23	++	75	Moderate.
28	++	20	,,
56	−−	10	Slight; much fibrosis.
62	−	80	None; ,, ,,
68	−−	60	,,
76	−	20	,, moderate fibrosis.

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This table does not bear out Hewer's contention that an alkaline colloid is evidence of activity. For in No. 62, in which there was comparatively little acid colloid (from a cretin), the epithelium was cubical or slightly flattened and unreduplicated, while the stroma was a good deal increased, suggesting that the gland had been overworked and was now exhausted ; while No. 28, in which the greater part of the colloid was acid, showed low columnar parenchyma with a fair amount of reduplication and a good deal of acid colloid in the lymphatics, suggesting that the gland was actively producing and absorbing its secretion. It may, however, be significant that the only gland in which the reaction was uniform was that of No. 20, which was remarkably hyperplastic and quite full of alkaline secretion.

The result of tabulating these cases of dual colloid in order of the approximate relative quantity of the alkaline secretion is shown in Table V.

The only evidence that emerges from this table is the suggestion that alkaline colloid may be found in the glands of girls about the time of puberty. On the other hand, Case 20 had never menstruated, and showed no secondary sexual characteristics.

Though additional presumptive evidence might be obtained from specimens stained with hæmatoxylin and eosin, I have refrained from doing so, since such specimens, not having been stained by the methods indicated, are open to misinterpretation. The evidence here available throws some doubt on the truth of Hewer's presumption of activity, but is not enough to furnish any definite conclusion. It can only be claimed that the very distinct staining reactions observed, and the constancy of their appearance in appropriate specimens, but their absence from others, do, indeed, strongly suggest that two secretions are present.

Besides these differences in staining reactions must be mentioned the differences in consistency. In 15 the colloid was mauve and granular, a fact which recalls Chalmers Watson's (7) bread-and-milk-fed rats, in which the colloid presented similar appearances. There is nothing in common among these cases, but it is possible that there may indeed be a dietetic origin for abnormal colloid. For though the dietary of the children was the same, the very young and those who are spoon-fed must of necessity have depended on "slops", and of the above 15, no less than 8 were blind or paralysed, 3 were under the age of 3 years, and 2 were seriously ill; of the other two there is no definite evidence. It may be objected that other spoon-fed children did not show this change, and that for a dietetic deficiency to be postulated where all are taking the same food, all must be affected. That this latter assumption is unjustifiable is shown by the fact that of 500 of these children on a standard diet, 7 developed scurvy and the rest did not. Proof, however, of a dietetic origin of variation in colloid is lacking.

Finally must be mentioned a series of 15 specimens, in which the secretion was not in the form of a homogeneous hyaline or slightly granular material,

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TABLE V.

No.	Sex.	Age.	Type of amentia.	Illnesses.	Cause of death.	Nutrition.	Season.
20	F.	15	Secondary	Measles, whooping-cough, otitis media	Asphyxia	Wasted	May.
16	F.	14	Primary	Rickets, measles, enteritis (? tuberculous)	Phthisis	Normal	August.
22	F.	13	,,	Whooping-cough, pneumonia, otitis media, measles, scarlet fever	Carditis	,,	April.
62	F.	14	Secondary	?	?	Fat	March.
23	M.	3	,,	Tonsillitis	Myocardial degen.	Normal	,,
68	M.	8	Primary	?	Pneumonia	,,	February.
12	M.	3	Secondary	Whooping-cough, measles, pneumonia	? Phthisis	Wasted	April.
28	F.	7	Primary	Whooping-cough, measles, erysipelas	Broncho-pneumonia	Normal	January.
76	M.	6	,,	Rickets, chickenpox, measles	Pneumonia	,,	February.
56	F.	10	Secondary	Measles	Inanition	Wasted	?

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but occurred in a mass of radiating strings in a way reminiscent of mucin. Possibly this appearance was actually caused by the presence of larger and more numerous vacuoles than those usually seen. And if the presence of vacuoles is evidence of absorption, as it probably is, these 15 cases might be expected to yield evidence of rapid utilization of thyroid secretion, such as might perhaps be found at a period of rapid development or of increased metabolism, *e.g.*, in fever. But in point of fact these specimens came from all ages from 2 to 8, and all types, including mongols, in whom the clinical evidence of thyroid activity is not conspicuous. And though most of them had had more than a week's fever before death, in one case there was none, death being due to spontaneous subarachnoid hæmorrhage. It can only be said, then, that the secretion looks like mucin, but that no evidence of its true nature or causation can be offered.

Hypertrophy.

In the adult gland the vesicles are lined by a single layer of low cubical or low, but not frankly, columnar epithelium. Hypertrophy, or elongation of the individual parenchyma cells, is generally accepted as evidence of activity. This would be in keeping with the observations of Cooper (17), according to whom hypertrophy is one of the most characteristic features of the thyroid in childhood ; for she states that the histological picture becomes increasingly like that usually considered typical of exophthalmic goitre from the age of 3 into adolescence.

But in this series, the epithelium was of the tall columnar type in only 9 instances. In another 30 there was either slight elongation, or else there were patches where the epithelium was more fully developed than in the rest of the gland, so as to suggest that some degree of hyperactivity was indeed present. Of the remainder, 22 were cubical, 21 were slightly flattened, and the rest, 8 in number, were decidedly flattened, one very much so.

At the columnar end of the scale, 4 showed features reminiscent of the changes usually associated with primary thyrotoxicosis. These cases were as follows :

No. 5, the most close resemblance—partial exhaustion of colloid ; columnar cells sometimes two or three deep or infolded, sometimes desquamated ; stroma scanty, with full capillaries and absence of cell masses.

No. 61 : Colloid completely absent ; alveoli rendered very irregular by intense proliferation of columnar cells, which are often several layers deep, thrown up into several layers, and desquamating freely. The stroma is scanty, the capillaries are empty, and there are very few cell masses.

No. 85 is almost identical, save for an increase in the interlobar connective tissue, while in No. 2 fibrosis between the individual alveoli is found in addition.

The clinical histories of these and of the other hypertrophic cases are

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as follows, and again, any classification can be only histological, for though 6 of them showed prolonged invalidism, death followed short illnesses in 2, and in 2 was quite sudden.

TABLE VI.

No.	Sex.	Age.	Type.	History.
5	F.	3	Microcephalic	Died of bronchitis.
61	M.	5	Primary	Pertussis, colitis, measles, acute phthisis.
85	F.	8	,,	Pneumonia, empyema, pericarditis.
2	F.	6	Microcephalic	Pertussis, measles, otitis media, pneumonia.
58	M.	6	Secondary (inflammatory)	,, ,, meningitis.
60	M.	6	Secondary (vascular)	*Status epilepticus.*
74	M.	5	Mongol	Scarlet fever, chicken-pox, broncho-pneumonia.
87	F.	4	Secondary (epileptic)	Pneumonia, *status epilepticus.*
88	M.	6	,, ,,	Pertussis, measles, chickenpox, broncho-pneumonia.

In the remaining 30, which showed hypertrophy, there was again nothing else in common except in one group, and as the characteristic of this was not so much hypertrophy as hyperplasia, they will be considered under that heading.

At the other end of the scale come the 8 cases in which the epithelium was flattened. In all of them there was a total absence of hyperplasia, the stroma was scanty and cell masses inconspicuous. The only difference is in the amount of colloid present. But here again a tabulation of sex, age, type and past history, cause of death and post-mortem appearances reveals no common factor.

Hyperplasia.

1. Like hypertrophy, hyperplasia, or numerical increase in the epithelial cells, is evidence of activity. When the functional demands on the tissue are very heavy, as has been investigated after experimental ablation of a large part of the gland, hyperplasia is the result. Similarly, during the active development of later childhood there is hyperplasia, as evidenced by "piling" (Cooper (17)). Even syncytial masses have been described in the normal gland, but so considerable a change seems to me suggestive of an almost pathological demand on the gland. But "piling" is not the only evidence of hyperplasia, and the process is best considered under the headings of "piling" and "papillary formation", "desquamation" and the "cell masses." Owing to the way in which these features overlap and are masked by other features, a classification on the basis of hyperplasia presents more difficulties than one dependent simply on the condition of the alveoli or the existence of hypertrophy.

Piling and papillary formation may be closely counterfeited by desquamation, for if the desquamated cells lie in clumps in contact with the parenchyma lining the alveolus, they will give the appearance of having grown from it; the more so if the lining of the alveolus happens to be intact in the

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plane of the section, and the desquamated cells have come from some other part of it. Allowance must be made for this possibility. But on the other hand, it is certain that true reduplication of the cell layers does occur, as does also papillary formation. A good instance of these processes may be seen in Case 82. Here a large papilla can be seen, consisting of a delicate stroma at the base from which project masses of cells, which seem to spread syncitially. These syncytial masses may burrow into the colloid and, by increase of the colloid, become detached from the parent stem, as may be seen in the microphotograph of Case 20, Fig. 3. If, now, the colloid

FIG. 3.

undergoes absorption, these isolated cells left adrift in the lumen of the alveolus will be indistinguishable from cells shed by degeneration of non-hyperplastic parenchyma. There are other ways of accounting for apparent desquamation :

2. It may be that, in response to a physiological stimulus, regeneration takes place in a previously quiescent parenchyma. A new lining forms in the alveolus, and the old cells are shed into the lumen without the new lining undergoing multiplication. This multiplication is recognizable as hyperplasia in that the new cells form solid masses or papillæ. It is possible that this is, indeed, the explanation of some of the cases, and these may then be regarded as a genuine, but mild, hyperplasia. The difference between this and the previous explanation lies in the fact that the previous type represents hyperplasia in a gland actively secreting colloid and then re-absorbing it,

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while in the second type the cells of a previously exhausted gland are regenerating.

3. That desquamation is a manifestation of autolysis is suggested by the fact that it is not a common finding in material removed at operation. In 12 specimens of secondary toxic goitre, in which hyperplasia was more or less prominent, desquamation was never as conspicuous a feature as in many of these glands. On the other hand, Cooper (17), in her survey of normal thyroids based on fresh material, mentions desquamation as a characteristic which appears at the end of the second year, and increases as age advances. Moreover, in an attempt to correlate the presence of desquamation with the degree of autolysis (as presumed with respect to the season of the year and the length of time that had elapsed between death and autopsy), no connection could be established in this series.

4. A fourth possibility is that the cells were squeezed from their attachment in the course of the handling necessary for removal of the gland. This is rendered doubtful by the fact that most of the material was obtained in the same way. And further, desquamation was a feature of one of the specimens where the material for microscopic examination was removed before enucleation of the whole gland.

Desquamation may then be considered in conjunction with papillary formation and " piling " as evidence of hyperplasia. In the light of this, a short but very definite sequence of 17 specimens may readily be grouped together, and will now be considered in greater detail.

As may be seen from the microphotograph of Case 20 (Fig. 3), the characteristic feature of these glands is their highly cellular nature. In this case, colloid and cells lie mixed in inextricable confusion, so that although the alveolar structure of the tissue is recognizable here and there, it is, in the main, lost. The stroma is so delicate that it can be recognized only in places. A similar, indeed almost indistinguishable, state of affairs is to be found in specimen No. 37 and, to a large extent, in No. 82.

No. 60 shows a stage nearer to the familiar alveolar type of structure. In Fig. 4 on one side the parenchyma blends with, and infiltrates the colloid in the manner of the preceding specimens. In the middle is an alveolus composed of a solid mass of parenchyma cells, while on the other side, again, the cells have arranged themselves round the edge of a small alveolus and have secreted a well-defined colloid into the lumen. With this specimen may be classed Nos. 52, 47, 70, all showing hyperplasia of this type with colloid storage; and the same may be seen, though to a less pronounced degree, in Nos. 79 and 16, though in these the alveolar structure is as definite as in the normal adult gland.

In Nos. 35, 61, 67, 28, 18 and 19 the same type of hyperplasia is found, though not in such degree, and the colloid is largely or completely exhausted. In No. 87 hyperplasia is a fairly conspicuous feature, but a more prominent

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characteristic is fibrosis, and in No. 89 both these are less conspicuous, so that, if it were not for the fact that the parenchyma may be seen here and there infiltrating the colloid, this specimen might almost be considered simply as an example of hyperplasia, rather than one showing the characteristics with which this sequence began.

There is, then, here a series of specimens which, starting with a colloid-infiltrating hyperplasia and loss of alveolar structure, passes gradually down towards a simple increase in the cellular content of a gland of the more usual alveolar structure, the sequence being interrupted only by such variations as the quantity of colloid present (which has already been shown to be without significance), and by the degree of fibrosis—a question which will be dealt with in greater detail later.

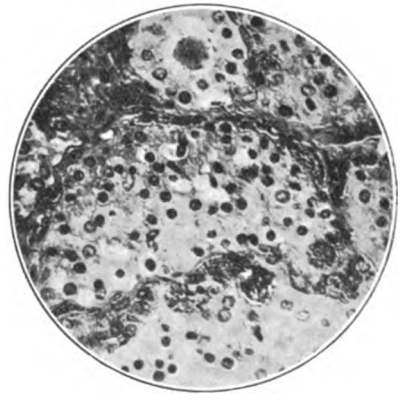

FIG. 4.

A consideration of the more typical cases from a clinical standpoint reveals the following facts: No. 20 was from a female diplegic, æt. 15, who had never menstruated and who died in May from asphyxia. The body was wasted and deeply pigmented in a way almost suggestive of Addison's disease, but the adrenals were normal macroscopically, while the thyroid looked normal and there was no thymus present. No. 37 was also from a female, a simple primary case, æt. 3, who died in May of pneumonia after a week's illness. Her body was wasted, and the thymus was vestigial. No. 82 was from a female, æt. 3, a microcephalic, who died in June of "inanition". The autopsy revealed no organic disease, but the thyroid was said to be enlarged and the thymus was absent. No. 60 was from a male, æt. 6, a secondary (vascular) ament, who died of *status epilepticus* in August. He was of a fat, eunuchoid type, with undescended testes and a large thymus. No. 52 was from a hydrocephalic male, æt. 2, who died in July of broncho-pneumonia. He was wasted, the thyroid was normal macroscopically, the thymus could not be found and the testes were undescended. No. 47 was also a male, but in this case

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the testes were descended; he was a microcephalic, æt. 10, and he died of pneumonia in May. No. 70 was also from a male secondary (vascular) ament, who died of diphtheria in April at the age of 6; his testes were descended and his thymus was large.

Judged by these factors, there was no common feature among them. It may be noticed that there seems to be no particular relationship between the age and this type of hyperplasia.

In addition to the 17 cases showing this colloid-infiltrating hyperplasia, or some recognizable stage of it, 19 showed a lesser degree of hyperplasia in the form of small papillæ or reduplication of the alveolar lining. In these, as in the others, no common factor could be found in the study of the clinical histories or of the post-mortem appearances.

The Cell Masses.

Solid masses of cells (or what appear to be such) lying between the alveoli are often a conspicuous feature of thyroid tissue. Hertzler (16) states that they are a prominent feature of the thyroid in childhood, but writes of them as if they were not the ordinary gland parenchyma at all. The existence of interstitial tissue in the adult gland is emphatically denied by Rienhoff, and it is unlikely, to say the least of it, that a tissue so prominent in childhood should vanish so completely in adult life. For even the thymus, which seems to have entirely atrophied by the time maturity is reached, may be discovered to be still present by microscopical examination.

If these masses are actually identical with the alveolar epithelium, there are two possible ways of accounting for them. They may, as Rienhoff says they are in the adult, be places where the microtome has touched the edge of an alveolus. If the alveolus is spherical only a few cells will appear, but if it be flattened quite a large patch will be seen. This explanation would well fit all cases, and is supported by the fact that in general the thicker the section the more conspicuous the masses, but that in most of these cases careful resolution would show that the lack of alveolar arrangement was only apparent and not real.

There is, however, an opposite view to which apparently Cooper subscribes, namely, that these masses are indeed solid, and represent a reserve of parenchyma which, under the stimulus of increased demands for secretion, will develop into fully formed alveoli. Though such a reserve is not met with in other glands, there is really nothing inherently improbable about its occurrence in the thyroid, on which the demands are not really exactly analogous to those on other tissues. But evidence in refutation of such a theory may be derived from these specimens, which in 9 cases showed a complete absence of any evidence of such cell masses. Now if these cells represented a reserve, one would expect these 9 specimens to be derived either

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from definitely inadequate glands (as of cretins), or from glands which showed histological evidence of colloid exhaustion, combined with compensation in the form of hypertrophy or hyperplasia or both. But one would not expect a cellular reserve to be absent from quiescent or only partially exhausted glands. Yet of these 9 specimens, 2, already described as resembling goitre, seem to be quite quiescent ; 3 are partially, and 1 (a cretin) quite exhausted without attempt at compensation, and only 2 show the appearances of colloid exhaustion with that compensatory overgrowth of epithelium which one might expect to be associated with exhaustion of an epithelial reserve. (The ninth specimen, being completely fibrotic, is not included in these considerations.) Further, one of the cretinous specimens shows an amount of " reserve " which is incompatible with a gland already incapable of meeting the normal demands of the body.

Consequently the balance of probability seems to be in favour of Rienhoff's view, even in the child, and the presence or absence of these apparent cell-masses is not taken as a histological characteristic of any significance.

Stroma.

Fibrosis, or increase in the supporting tissue at the expense of the parenchyma, is evidence of a period of involution or diminished function. Such changes may commonly be seen in the prostate or mammary glands as old age approaches, but it might have been expected that in such a tissue as the thyroid of childhood, on which the demands of increasing growth and heightened metabolism are being made, though periods of relative inactivity might occur, they would not be profound enough to be accompanied by actual regressive changes.

But such changes are found ; indeed, in 10 of the specimens it was quite pronounced, and in another 24 it was less advanced, but quite definite. The most remarkable was No. 75, from a cretin, in which the thyroid is represented simply by a mass of fibrous tissue, in which no parenchyma can be traced Unfortunately, further details of this specimen are lacking, so that it cannot be said that the thyroid did not exist, but rather that that part of it selected for examination had become obliterated. The 2 other cretins in the series both showed fibrosis ; little is to be seen in No. 81 (Fig. 5), but in No. 62 (Fig. 1) a mass of young fibroblasts can be seen at the periphery of the gland.

One of the most striking examples of overgrowth of fibrous tissue is seen in a specimen, No. 14, from a boy, æt. 7, in whom no clinical evidence of hypothyroidism was recorded. He was a mongol with undescended testes, who though short, as all mongols are, was not conspicuously so, and whose only previous illnesses were gastritis and stomatitis. He died of measles and pneumonia, and at autopsy the most remarkable feature was complete absence of the thymus. As may be seen in the microphotograph (Fig. 6),

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the parenchyma is compressed into bands by a strangulating overgrowth of the stroma; the alveoli are flattened out and infiltrated with lymphocytes.

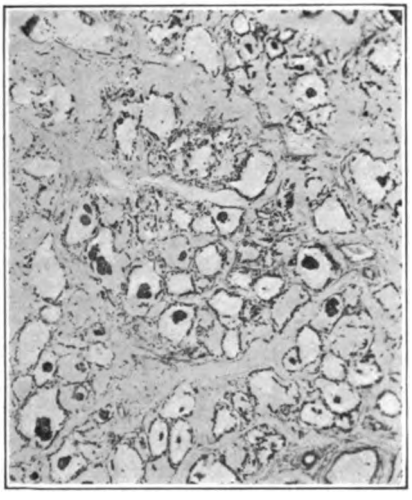

FIG. 5.

A similar, though less pronounced appearance was seen in No. 73, also from a mongol, in whom no thymus was found. She died at the age of 5 of pneumonia and empyema, and had had no previous illness. Another

FIG. 6.

specimen which showed fibrosis, though not compressing the parenchyma to the same extent, was No. 57, from a male, æt. 5, with rickets and undescended testes, who died of a fibroid lung with terminal pneumonia after a long illness. No thymus was found. The other 4 cases are distinguished

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by the density of the fibrous tissue between the separate alveoli. The least of these is shown in the microphotograph of No. 80 (Fig. 7). Particulars of these cases are as follows: No. 80 was from a male, æt. 5, with a meningocele and undescended testes. He had had bronchitis and measles and died of fibro-caseous phthisis; no trace of the thymus was found. No. 6 was from a male mongol, æt. 7, with undescended testes; he had had measles and whooping-cough and died of phthisis; his thymus could not be found. No. 34 was from a male mongol, æt. 4, whose testes were also undescended. He had had pneumonia and otitis media, erysipelas, gingivitis and necrosis of the mandible and died of generalized tuberculosis. No. 51, a female, died at 10 of broncho-pneumonia. She had had measles, pneumonia, scarlatina, broncho-pneumonia and mumps. No trace of her thymus could be found.

FIG. 7.

In this series of cases showing fibrosis, all the males had undescended testes, and in none could any trace of the thymus be found. Otherwise there was no common factor. One would naturally look to the past history for evidence of the cause of so slowly-developing a change as fibrosis. Yet nothing consistent emerges. For though the many serious maladies that had beset No. 34 might well have exhausted any gland, the same cannot be said for the gastritis and stomatitis of No. 14. A conspicuous feature of these cases was the absence of the thymus gland from all of them except one in which there was no record. I believe that this association was not without significance, but it will be dealt with in some greater detail in considering the thymus itself.

Blood-Supply.

The last question to be discussed from a histological standpoint is that of the blood-supply. This is probably not an indication of much significance, since the blood-supply of any organ may vary extremely within

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a very short time. The condition of the blood-vessels might, therefore, be expected to give very little evidence of the activity or otherwise of the organ for any length of time before death. This view of the significance of the blood-supply is borne out by the state of the vessels in this series, for though 9 of the 11 cases which showed dilatation and congestion of the vessels also showed evidence of activity, in the other 2—in 1 of which the congestion was particularly marked—there was no hyperplasia or hypertrophy of the epithelium, and only partial exhaustion of colloid.

An associated feature, perhaps more suggestive of activity, is the presence of red blood-cells within the alveoli. This was noted in 15 cases which, like the preceding, were usually, but not always associated with hypertrophy and hyperplasia. Conversely, these evidences of activity were by no means always associated with the presence of hæmorrhages. It was thought that perhaps the cause of death might be a factor, since a condition of *status epilepticus* might well be enough to rupture capillaries. But apparently this was not so, for of 9 deaths from this cause, only 2 fell into the present group. Indeed, in this, as in the other features, a consideration of the sex, age, illnesses, cause of death and season of the year affords no indication of the cause. And this, combined with the very varying histological picture associated with the cases of congestion and hæmorrhage, suggests that these features are without significance.

Clinical Analysis.

The next step was to see if any common histological features could be found when the children were grouped on a clinical basis. Subsequently, various other factors which might have had an influence on the appearances of the thyroid will be considered.

It will by now be obvious from what has gone before that the histology of these specimens has varied within such extremely wide limits that no constant feature has been found which could be associated with the existence of mental deficiency. Nor is this to be wondered at when we consider that mental deficiency is merely the common outward sign of a variety of different conditions, which should be spoken of not as if they were one disease or defect —amentia—but as "the amentias" or "oligophrenias."

The classification of these conditions is complicated and, in our present state of ignorance of the subject, unsatisfactory. They are usually spoken of as primary and secondary, and Tredgold (21) says that the former provide 80% of all cases of mental defect and are due to impaired germ-cells; the latter make up the remainder and occur, not as a result of germinal deficiency, but where "the normal growth of the brain or mind is interfered with or arrested by some adverse factor acting directly on the patient". Even on this basis classification would not be an entirely simple matter, but it is further

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complicated by the inclusion of "delayed primary amentia", where the defect is produced by an "illness, fright, or fall in the early years of life, such as would be incapable of damaging the nervous system of an ordinary child". Tredgold's classification is as follows—

Primary:

(1) Simple,
(2) Microcephalic,
(3) Mongolian,
(4) Sclerotic;

Secondary:

(1) Traumatic and vascular,
(2) Inflammatory and toxic,
(3) Epileptic,
(4) Endocrine;

and this is a classification to which I shall in the main adhere, though with certain modifications.

The simple primary is really the least satisfactory group in this series, since it contains those who do not fit into any other. There are 31 of them in the present series. In 4 nothing was known of the family history; in 14 nothing abnormal was elicited, but this has not much significance, since many parents resent their child's detention in a mental hospital, and are then not likely to enlarge on familial mental instability. In the other 13 there was a definite neuropathic taint; 8 of these were associated with epilepsy.

I have included under the heading of primary amentia the only case of proved syphilis in the series—that of a boy with juvenile general paralysis. No doubt there were other cases of syphilis, but the Wassermann reaction was not done as a routine at the time. Whether syphilis should be classified as a cause of a primary or secondary amentia is a debatable point since, as Tredgold points out, it may either impair the developmental potentiality of the germ-cells, or act upon the embryo after fertilization.

Microcephaly, of which there are 10 examples, is a type which is liable to misinterpretation, since some workers include under this heading all whose heads are abnormally small, while others reserve it for smallness combined with a typical configuration of receding forehead and sloping sides. The specimens in this series belong to the latter category.

The 22 mongols and one sclerotic belong to definite clinical types which do not here need further elaboration.

On this basis of classification, 65 cases fall into the group of primary amentias, giving a percentage of 72, which does not differ greatly from Tredgold's 80%. As contributory evidence that these "simple" cases are indeed due to defective development, it may be mentioned that of 13 males no less than 8, or 61%, had undescended testes; while of the other primary groups, 11 out of 20, or 55%.

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The secondary amentias.—The traumatic and vascular lesions account for 8 cases. Three of these were of infantile hemiplegia, and 5 of Little's disease. I have thought fit to include these latter among the secondary cases, since the generally accepted theory is that the condition is secondary to cortical or meningeal hæmorrhage at the time of birth (Thomson (22), *et al.*), though Collier (23) has advanced the theory of agenesis or degeneration of cortical neurones from a cause that is as yet unknown.

In the second group, the inflammatory and toxic, are included 2 cases which followed meningitis, 6 of hydrocephalus, and 1 in which the mother was known to have taken ecbolics, and no familial taint was recorded.

The third group, the epileptics, presents difficulties. Tredgold writes: " It is easy to mistake cause for effect, and my experience is that in the great majority of cases where the two are associated in early life, both conditions are a manifestation of the neuropathic diathesis ". If all the epileptics in this series were considered together, they would constitute a group of 18 cases. However, I have broken them up as follows: Three of them, being associated with paraplegia or hemiplegia, naturally fall into the traumatic or vascular group. Two more are grouped with the hydrocephalics. Eight others have already been mentioned as included with the simple primary cases. Their family histories are of interest and are briefly as follows:

No. 61. Father very nervous, father's aunt insane.
No. 27. " Family history of insanity and cataract."
No. 84. " Illegitimate child of mentally defective mother."
No. 50. " Father's mother in asylum."
No. 67. Father's brother feeble-minded, father's mother insane.
No. 15. Intemperance of father, who was mother's uncle.
No. 45. " Family history of tuberculosis and hydrocephalus."
No. 32. " Mother epileptic."

In these cases I have little doubt the epilepsy was an association and not the cause of the mental deficiency. The other 5, having no neuropathic taint, are considered as a secondary group apart.

Finally, the endocrine cases are the 3 cretins. Case 54, already mentioned as possibly an endocrine case on account of the unusual growth of hair on the face, was included with the simple primary cases, as there was no definite evidence of hormonic dyscrasia. The occurrence of congenital glaucoma and undescended testes suggested the existence of a developmental abnormality.

If any abnormality of the thyroid is to be found among the simple primary cases, it is most likely to be in the group in which a neuropathic diathesis may clearly be traced; for these are the ones in whom a congenital maldevelopment of the brain is the prominent feature. The following table, summarized on the same principle as Table IV, sets out, albeit in rather a rough way, the characteristics found in the thyroids of this group:

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TABLE VII.

No.	Colloid.	Hypertrophy.	Hyperplasia.	Fibrosis.
15	+++	−	+	−
16	++	++	++	+
18	−−	++	++	+
22	++	−	−	−
27	+	−	−	−
32	++	−	+	−
45	−−	−	−	+
50	−−−	−	+	−
61	−−−	++	+++	−
67	−	+	++	−
68	−−	−	−	+
72	±	−	−	−
84	+++	−	−	−

Such a table shows quite clearly that not only is there no superficial similarity common to all these specimens, but that, even allowing for variations produced by extraneous demands, there is no fundamental abnormality common to all.

Mongolism is the only type of amentia in which I could find any reference to the condition of the thyroid in the literature. And even here the evidence is very scanty. Kauffmann (15) records that he "found the thyroid unchanged in this condition". Brousseau (24), in a monograph on this condition, gives an account of the literature from which it appears that no extensive study has yet been made, but that, on the limited material available, most workers have failed to identify any abnormality. The few who have found any abnormality have only done so in a few cases, and even then nothing consistent has emerged in all.

In view of these divisions of opinion, and the fact that the 22 cases of mongolism in this series seem to provide a longer sequence than many previously recorded, I have summarized the features in the following table:

TABLE VIII.—*Glands of Mongols.*

No.	Colloid.	Hypertrophy.	Hyperplasia.	Fibrosis.
1	+	−	−	−
3	±	−	−	−
6	−−	−	−	++
14	−−−	−	+	+++
17	+	+	−	+
25	+	−−	−	−
26	++	−	++	−
33	−	++	−	+
34	−−	−	−	++
39	−−	+	+	+
41	−−	+	+	−
43	++	−	−	−
44	+	−	−	−
46	++	−	−	−
48	+++	−−	−	−
49	+	−	−	−
55	−−	−	−	−
66	++	−	−	−
73	−−	++	−	++
74	−−	+++	−	+
76	−	−	−	+
78	++	−	−	−

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In this table, as in the preceding one, no consistent characteristics are to be seen. But the great variety of structure may be best appreciated from the description of the specimens already mentioned and from Fig. 6.

Microcephaly shows a somewhat similar sequence.

TABLE IX.

No.	Colloid.	Hypertrophy.	Hyperplasia.	Fibrosis.
2	−−−	+++	+	+
5	±	+++	++	−
13	++	−	−	−
19	−−−	−	++	+
36	−−	−	+	−
47	+++	+	+++	−
59	+++	−	−	−
65	++	−	−	−
71	+	−	−	−
82	++	+	+++	−

None of the classes of primary aments have been found to have common factors, either individually or collectively. For the sake of completeness the 2 odd cases, 1 of epiloia and 1 of juvenile general paralysis, may be added.

	Colloid.	Hypertrophy.	Hyperplasia.	Fibrosis.
Epiloia 53	−	++	+	+
Con. G.P. 11	+++	−	−	−

The secondary aments may be tabulated on similar lines as follows:

TABLE X.

	No.	Colloid.	Hypertrophy.	Hyperplasia.	Fibrosis.
Vascular	20	+++	+	+++	−
	29	−−	−	−	−
	38	+	−	−	−
	42	−−	−	−	−
	51	−−	+	++	++
	60	+++	++	+++	−
	64	−	−	+	−
	70	+++	+	++	−
Toxic	8	++	−	−	−
	35	−−	+	++	−
	58	−−	+++	−	−
Hydrocephalic	12	+	+	−	−
	23	++	+	−	−
	52	+++	++	+++	−
	56	+++	−	−	−
	63	−−	−	+	+
	69	++	++	+	+
Epileptic	4	++	−	−	−
	9	++	−	−	−
	21	++	+	−	+
	87	−−−	++	++	+
	88	−−	++	−	−
Cretinous	62	+	−	−	+
	75	−	−	−	+++
	81	+	−	−	+

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Considered thus in individual groups or in their two main classes, there is a total absence of common grounds for comparison or contrast. Assuming now that either hypertrophy or hyperplasia may be taken as evidence of activity, the following percentages of activity and fibrosis may be worked out :

Primary	22	Mongols	36%	showed activity,	41%	fibrosis,	50%	neither.
	10	Microcephalics	60%	,, ,,	20%	,,	40%	,,
	33	Others	51%	,, ,,	45%	,,	27%	,,
	65		47%		40%		37%	
Secondary	8	Little's disease	62%	,, ,,	12%	,,	37%	,,
	9	Toxic and inflammatory	77%	,, ,,	33%	,,	22%	,,
	5	Epileptic	60%	,, ,,	40%	,,	40%	,,
	3	Cretins	0%	,, ,,	100%	,,	0%	,,
	25		60%		36%		28%	

These percentage figures show no particular difference between the primary and secondary groups, and as far as the subdivisions of these groups are concerned, the numbers, at any rate in the secondary group, are too small to justify any conclusions. However, the low figure of 36% for activity among the mongols is decidedly the lowest among any group, and does definitely suggest that in this type of amentia there is a tendency for the thyroid to be less than normally active. Further support to this suggestion is given by the fact that where evidence of parenchymatous activity is found, it is less in degree, as a rule, than in the other groups.

It now remains to consider various factors that might perhaps influence the histology of the thyroid in any sequence of 90 specimens. To reproduce in full tables such as those already given for the various types of amentia would only be to add needless elaboration, and detailed particulars are therefore omitted.

The Age and Sex.

The specimens for this purpose are divided into groups for the first two quinquennia and for the subsequent ages. This system, though arbitary, was adopted because the age of 5 has already been mentioned as the time when hyperplasia begins to overshadow colloid storage as the dominant characteristic, and because it will be in the group of over 10 years of age that any changes associated with puberty will be evident. A percentage table worked out on such a basis will be as follows :

	Age.						Total.	
	Birth—5.		5—10.		10— .			
	M.	F.	M.	F.	M.	F.	M.	F.
Number of cases	16	13	28	17	2	14	46	44
Percentage showing colloid storage	55	46	36	47	100	57	45	50
,, ,, activity (cellular)	44	69	54	64	50	36	50	57
,, ,, fibrosis . .	31	39	50	41	0	36	41	38

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In considering these figures the results for the males over 10 years old may be left out of account. To take the question of sex first, a comparison of total figures shows a close parallelism between the two, and this may further be seen if the respective groups are compared. Thus, that among the girls, for instance, 46%, 47% and 57% respectively should have shown some degree of colloid storage, while 51% and 36% of the boys showed the same, indicates that no particular age or sex significance can be attached to the presence of colloid. Indeed, the only contrast, and one that is of some interest, is in the question of cellular activity. In the case of boys the increase of 44% for the first five years of life to 54% in the second tends to support De Quervain's observations of the gland at this period of life, though the difference is too small to justify a definite conclusion. But the figures for the girls are rather striking. After the age of 10, only about half as many showed cellular activity as did so during either of the two preceding quinquennia. Nor is this difference due to the presence in the older group of a number of mongols in whom, as already suggested, absence of epithelial overgrowth is a common feature, for there was only 1 mongol in this group of 14 specimens. That such a lack of cellular activity should be found at this age is directly opposed to the views of the authorities already quoted, and it would be unjustifiable to deny the truth of their observations on the evidence of only 14 specimens. None the less, it is to be noted that the numbers of specimens on which these observations were based differed only very slightly, and the facts as here shown suggest at least that an increase in cellular activity is not the inevitable accompaniment of the approach of puberty.

The Cause of Death.

The fact that the specimens were all from low-grade defectives makes such an investigation as that described in this section one of unusual difficulty. In the first place, though the cause of death may be revealed by the autopsy, the duration of the fatal illness may be quite unknown. For these children, being unable for the most part to make known their complaints, may have been ill for some considerable time before this became apparent. Thus Case 39 had only one day's illness recorded, but was found at autopsy to have died of pneumococcal peritonitis, and Case 85, after only three days' recorded illness, was found to have grey hepatization of the lower lobe of the left lung, together with an empyema and pericarditis. Secondly, the actual cause of death may be incorrectly stated, for there are those obscure cases in which death can only be said to be due to " congenital brain disease " or " inanition ". Such a case was No. 36, a male microcephalic, æt. 2, who lost weight and became progressively weaker for three months, but in whom the post-mortem examination showed no evidence of disease. There were 6 such cases (including 2 who showed pyrexia). It is possible that in these the

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determining factor was overlooked. But judging by one case (not included in this series), in which I performed the autopsy myself, I believe that cases do occur in which no evidence of disease can be found on naked-eye examination, though it is not unlikely that a close microscopical scrutiny might reveal some such change as toxic degeneration of the myocardium.

In view of these possible fallacies, an examination of the specimens in relation to particular general diseases would probably produce misleading results. But in any case the cause of death would probably only influence the condition of the thyroid according to whether or not it was associated with a prolonged illness. In order to put this possibility to the test, three groups in which the cause of death was known were chosen from among these specimens. Group I consists of those who died suddenly, and includes 9 cases of *status epilepticus*, 1 of "*status lymphaticus*", 2 of asphyxia and 1 of pancreatitis. Group II consists of those who died after severe illness of moderate duration, namely 9–28 days (average 15), represented by 11 cases of broncho-pneumonia, and 2 which may have been lobar. Group III consists of 14 children who died of tuberculosis. A percentage table compiled on the same lines as before is as follows:

	I. Sudden death.	II. Short illness.	III. Long illness.
Number of cases	13	13	14
Percentage showing colloid storage	39	23	71
,, ,, cellular activity	54	69	43
,, ,, fibrosis . . .	54	54	64

It might well be expected that with an illness of some severity and duration as in Group II, the thyroid would show signs of exhaustion. This is borne out by a comparison of the figures of Group II with those of Group I, when it will be seen that colloid storage has diminished and cellular activity has increased. One might expect to see the same process carried a stage further in Group III, in which the fatal illness had been not only severe, but of longer duration. However, instead of this, the surprising fact emerges that colloid storage has increased enormously, and cellular activity has proportionately diminished. There seems to be only one explanation of such a state of affairs and that is as follows: With the onset of illness the colloid tends to be absorbed, and the epithelium will then begin to undergo compensatory hypertrophy and hyperplasia associated with increased secretory activity. These epithelial changes involve a production of secretion which is in excess of the body's increased demands, and the epithelium then tends to undergo regressive changes which may perhaps be exaggerated by exhaustion. It must be remembered, however, that the figures in these groups do not differ enough and the number of specimens available are not large enough to permit of generalizations, though as far as they go they do seem to support the explanation here given.

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The season of the year may be considered *pari passu* with the cause of death, since the same factor of increased metabolism due to increased thyroid activity may be at work in both. But in those who died of disease, external influences are likely to have a comparatively small effect compared with internal influences; however, a comparison of the 30 who died in warm weather between the beginning of April and the end of September shows some difference from the 60 who died during cold weather. For the difference between the 63% of cellular activity in the first group and the 44% in the second, though not very great, seems to suggest increased activity of the gland during the summer months.

	Summer.	Winter.
Number	30	60
Colloid storage	50%	48%
Cellular activity	63%	44%
Fibrosis	40%	38%

The State of Nutrition.

This again was thought to be a factor which might have an influence on the state of the thyroid—or perhaps it would be truer to say that some relation might be expected between the two. But as a matter of fact no such relationship could be discovered. In 21 cases the child was recorded to have been "well nourished", 7 of these being fat. Twenty-five were said to have been "wasted". In the case of the others, there was either no note or, more commonly, the body was said to be "fairly" or "poorly" nourished. A comparison of the two extreme groups on the same lines as before shows—

	Well nourished.	Wasted.
Colloid storage	62%	48%
Epithelial activity	71%	56%
Fibrosis	43%	32%

The wasted seem to show less colloid storage and less activity, but the differences between the two are not pronounced enough to suggest that they were associated with the state of nutrition rather than with any of the many other possible influences.

The Diet.

All these children were on a standard diet except those who, as already noted, were liable to be fed chiefly on bread and milk. This diet consisted in the main of porridge, milk, bread and margarine (or butter on two days a week); meat and potatoes, with "greens" twice a week, and suet or milk puddings. The most conspicuous defect is the low content of vitamins, the significance of which has already been described. But as no constant feature appeared in the series, the diet, as the prime factor in those variations which occurred, may be ignored; though in the light of McCarrison's researches, its contributory influence is probably considerable.

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The Thymus.

One of the most striking features in studying the post-mortem records of these children is the number of cases in which the thymus seemed to be atrophied. And the fact that the endocrine glands were all being collected for microscopical examination makes it fairly certain that, in every case in which a note was made, evidence of thymic tissue was carefully looked for. Such records were to be found in 71 autopsies, and on this evidence the thymuses can be divided into three groups as follows:

Group 1: Thymus absent or "vestigial". These terms seem to be used more or less synonymously, since no note of the evidence of thymic tissue was recorded in the "vestigial" cases. This group includes for 49 cases, or 69% of the total.

Group 2: The thymus was recorded as "small" or "very small", and where the size was recorded it was referred to as "half an inch across", or the "size of a bean" or "cobnut." To this group must be added three which were recorded as "large", since they weighed 14 grm. But this weight is shown by reference to Crotti's (25) table of normals to be below the average for the age. This group of small but definable thymus glands numbers 15 specimens, or 21% of the whole.

Group 3: This group of normals or larger includes 1 normal, 1 "fairly large" (size unspecified), and 5 in which the gland, as judged by Crotti's table, was definitely enlarged. These 6 represent only 10% of the whole.

The association of mental deficiency with thymic hypoplasia or atrophy is already well recognized. Tredgold (26) writes, " . . . in a series of 292 mentally defective children the organ was absent in 74%, while autopsies performed at Bicêtre on 408 non-cretinous idiots, ranging in age mostly from 1 to 5, showed the gland to be present in only 104. As against this, Katz, in performing autopsies on 61 mentally normal children, varying in age from 1 month to 13 years, who had died of various diseases, found the gland present in every case".

Now another well-known association is that between the thymus and thyroid. Biedl (27) writes—"of the pathological anatomical findings in Graves' disease, hypertrophy of the thymus is among the most frequent", and quotes seven corroborative authorities. After thyroidectomy the thymus undergoes hyperplasia, and after total excision of the thymus the thyroid undergoes hyperplasia—the colloid entirely disappears and the height of the epithelium is greatly increased (Crotti (25)). In myasthenia gravis "the thymus is often the seat of morbid changes. The abnormalities are not specific and may be divided into three classes: (1) Simple hypertrophy, (2) hypertrophy with proliferative and degenerative changes, and (3) new growth. The thyroid has been found to be the site of lymphorrhages, interstitial fibrosis, colloid degeneration of the fibrous stroma and proliferation of the epithelium with

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the formation of new vesicles" (Buzzard and Greenfield (28)). Finally, Pennachietti (29) found an early hypoplasia of the thymus in 2 cases of congenital athyroidism.

This evidence seems at first sight to be somewhat contradictory. Athyroidism is associated with thymic hypoplasia; in primary thyrotoxicosis and in myasthenia gravis, thyroid hyperplasia is associated with thymic hyperplasia. On the other hand, surgical removal of one is followed, not by atrophy, but by hyperplasia of the other. Perhaps the contradiction is only apparent, and the explanation of the latter cases is that what is left of either gland after the excision undergoes compensatory hyperplasia, and it is this hyperplasia that is associated with the hyperplasia of the other gland.

In view of this interaction between the two tissues and the considerable abnormality of the thymus in defectives, one might well look for an associated thyroid abnormality. Take first the thyroid in the 5 cases in which the thymus was definitely enlarged.

CASE 9.—Female, æt. 9, a secondary ament with epilepsy. Past history: Influenza; died of *status epilepticus*. The thymus weighed 43 grm., and microscopically there was some distinction between the cortex and medulla. There was apparently no fibrosis, eosinophil cells were moderate in number, but not conspicuous, and Hassall's corpuscles were numerous. The thyroid showed smallish regular vesicles, mostly filled with colloid, which was generally pink and hyaline, but sometimes mauve and granular, and occasionally both; the epithelium was cubical or slightly flattened and the stroma normal.

CASE 30.—Male, æt. 2; simple primary ament with evidence of rickets; his tonsils were enlarged and he died of *status lymphaticus*. His thymus was found to weigh 42 grm., and microscopically the cortex was very clearly defined from the medulla. There were few Hassall's corpuscles or eosinophil cells and scarcely any fibrosis. In the thyroid the colloid is mostly exhausted, and what remains is stained with the hæmatoxylin. The epithelium is cubical without evidence of reduplication and the stroma is increased.

CASE 67.—Female, æt. 4; a simple primary ament, who had had measles and died of *status epilepticus*. The thymus weighed 42 grm. The thyroid was less than half full of colloid, which was stained mauve and much vacuolated. The epithelium was low, columnar, and occasionally infiltrating the colloid. There was a good deal of desquamation and the stroma was normal.

CASE 70.—Male, æt. 6; secondary (vascular) ament. He had had rickets, whooping-cough, scarlet fever, measles and broncho-pneumonia, and died of diphtheria. His thymus measured 12 cm. (normal average 8 cm.). The thyroid follicles were all full of pale eosinophil colloid. The epithelium was cuboidal or low columnar, with some desquamation and some hyperplasia infiltrating the colloid.

CASE 55.—A male mongol, æt. 3, who had had measles twice, and died of lobar pneumonia. The thymus weighed 28 grm. The thyroid showed scarcely any colloid. The epithelium was much shrunken from the stroma and was cubical, but without hyperplasia, and the stroma was normal.

Beyond the fact that in each case the thymus was enlarged, there seems to be nothing in common to these cases or to their thyroid glands. Indeed, one is rather impressed by the differences between them. But perhaps the most striking thing is that the thymus of No. 70 should have been enlarged

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at all. For if "accidental involution" is the outcome of disease, he, with his six illnesses in as many years of life, might well have been expected to have had a small rather than an enlarged thymus.

For an interaction between the thyroid and thymus to be proved, there must be absolute constancy in the appearances. No allowance need be made for extraneous factors, since if the glands work in association, what affects one will also affect the other. Such a close association has been shown to be absent in the group of large thymuses, and it is equally absent in those with no thymus. These latter show a greater diversity in age than the former, but, like them, show great variety in all other respects. Their thyroids are no exception to this rule; 45% showed colloid storage, 51% evidence of cellular activity and 35% fibrosis.

As has already been mentioned, there seemed at first to be an association between fibrosis of the thyroid and absence of the thymus. The state of the thymus was recorded in 6 of the 10 cases in which the fibrosis of the thyroid was most marked, and in all of them it was absent. That this might point to a connection is possible without the converse, namely, that absence of the thymus is always associated with fibrosis of the thyroid, being true. But doubt is thrown on the possibility of such an association by the fact that in No. 30, where the thymus was large, there was increase in the stroma of the thyroid. No definite association, therefore, can be demonstrated between the thyroid and thymus in this series of specimens.

Summary and Conclusions.

The thyroid is a tissue on which the demands may vary almost from moment to moment. Moreover, the factors, both internal and external, which are already known to affect it are very numerous, and it is not unlikely that others may yet be found. Apart from actual disease, the possible combinations of these factors are likely to lead to a good deal of variation in the appearances of the tissue, and consequently, any concept of a "normal" thyroid is likely only to prove misleading, no less in the child than in the adult. This view, based on theoretical grounds, receives in this series some practical support from the fact that, though parenchymatous activity has been said to be the usual accompaniment of the approach of puberty, such changes were here found to be rather uncommon than otherwise.

The variations in the appearances of these glands are extraordinarily wide. No constant findings could be established to connect mental deficiency with histological abnormality of the thyroid. Nor was it possible to find any feature which would distinguish the primary from the secondary amentias, nor were the appearances of the thyroid in any of the sub-types of these groups consistent, save only in the case of the mongols. And here

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all that can be said is that evidence of a qualitative and quantitative lack of parenchymatous activity suggests a diminution of thyroid function in this condition. This absence of any general agreement among the specimens from the point of view of the various clinical types, suggests that in investigating other possible factors these glands may be considered as an ordinary sequence, and that a comparison with a control series from children of normal mentality is unnecessary.

These specimens then, considered simply as series of children's thyroids, show that a type of hyperplasia is found which is not seen in the adult. In it the epithelial cells grow syncytially and infiltrate the colloid, and the process may advance to such a degree as entirely to obscure the original alveolar structure of the tissue. Another feature of the gland of childhood, and one to which in the past much significance has been attached, is the so-called " cell masses ". From the evidence here available it seems that these masses are of no more significance in the child than in the adult, and they are therefore of no value as a histological criterion. Finally, some increase may be found in the fibrous stroma of the glands of quite young children in whom, on clinical grounds, there has been no reason to suppose that the thyroid had been the subject of excessive functional demands.

The colloid may vary greatly in its appearance and its staining reactions, being hyaline, granular or apparently mucoid, and either acid or alkaline in its staining affinities. As far as consistency is concerned, these specimens throw no light on the causation of the different varieties. The acid and alkaline, however, seem to represent two different secretions, and the reaction appears to be independent of the activity of the tissue as postulated by previous observers.

The state of nutrition of the patient seems to have no connection with the histological appearances of the thyroid. The effect of the season of the year is slight, hot weather tending to produce increased cellular activity, but no change in the amount of colloid. Fever, on the other hand, at first leads to absorption of colloid and increased activity on the part of the epithelium. But if the fever is continued, over-compensation is the result, and the gland then reverts towards a condition of colloid storage with diminished cellular activity.

Though an association between the thyroid and thymus has been established in many abnormalities of the former, and though the thymus tends to atrophy prematurely in the amentias, no close correlation could be found between the two glands. But the more considerable degrees of fibrosis in the thyroid were associated with absence of the thymus.

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THE BLOOD-UREA IN PSYCHOTICS.

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ALTHOUGH the blood-urea level is not uniformly distinctive of any type of psychosis or phase of a psychosis, yet its estimation in general psychiatric practice is probably as useful as any other test or reaction in use to-day.

The determination of the blood-urea by the urease method is simple to carry out, and with a good suction pump three sets of tubes can be aspirated simultaneously in series. Such a series can be prepared in half an hour, left with the pump on for an hour and a half, and finally disconnected and titrated in a further fifteen minutes—a total of three-quarters of an hour of actual laboratory work. This averages fifteen minutes for each estimation—no mean advantage in a busy hospital.

Walker (1, 2) and McCowan (3) have stated that nothing typical was found in a series of blood-urea estimations in psychotics, and that even in those with high blood-urea content renal disease was usually absent.

This paper, however, is not concerned particularly with the actual incidence of renal disease, but with the point of view that if a patient has a blood-urea of, say, 60 mgrm. %, then, notwithstanding the absence of renal disease, and whatever the type of psychosis, that patient has a definite abnormality which may be of clinical use as a guide to prognosis or treatment.

The blood-urea is subject to fairly wide variations in normal people, and de Wesselow (4) stresses the fact that urea is not a threshold substance but is purely a waste product ; theoretically, it may fall almost to *nil*, and that although in most cases the diet is not of great importance, nevertheless a high protein diet may raise the normal level to 50 mgrm. %, or a very low protein diet reduce it to 12 mgrm. %. He also points out that adequate water must be available for the excretion of urea, and thus a high blood-urea may be due to the dehydration following an insufficient fluid intake.

Beaumont and Dodds (5) give the normal blood-urea level as 20–40 mgrm %. While pointing out the general reliability of this estimation, they mention that prolonged vomiting, intestinal obstruction and acute abdominal conditions increase the blood-urea, but such conditions are comparatively rare in a mental hospital, and could be ruled out in any individual case. They further state that the amount of nitrogen retention bears little relation to the extent of renal damage.

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Shera (6), in an investigation of the urea content of the cerebro-spinal fluid and of the renal changes in 200 successive psychotics who were examined post-mortem, found abundant evidence of renal damage. He states that when the urea in the cerebro-spinal fluid is increased in the living subject the fluid is invariably under pressure and greatly increased in volume, and that in cases dying with high urea contents the brain shows obvious signs of recent compression and œdema, in marked contra-distinction to those yielding normal readings. He believes that this abnormal pressure had been operative as long as there had been nitrogen retention, and he brings forward evidence of pressure atrophy of cerebral convolutions resulting from it. In 78% of his subjects abnormal urea levels were found in the cerebro-spinal fluid, the reading being above 100 mgrm. % in 63%. Shera instances cases where the urea estimation was performed before and after death with no change in the result; but such extensive abnormalities are not so apparent in cases seen for the first time in the acute wards of a mental hospital as they are in subjects seen for the last time in a post-mortem room.

The statement advanced by Shera, that the urea content of the cerebro-spinal fluid is usually a measure of its pressure, does not call for separate estimations of the urea content of that fluid, since, as Greenfield (7) points out, the percentage of urea in the blood and cerebro-spinal fluid is almost identical.

The possible effect of toxic states on the blood-urea is illustrated by the observations of Shackle (8), who found greatly increased blood-urea levels in 27 of 35 patients twenty-four hours after ether anæsthesia. Seven of the remaining 8 cases had high blood-ureas initially. Age and duration of anæsthesia did not seem to affect the results.

The association of confused mental states with the toxicity of nephritic conditions is well recognized in almost every text-book of psychiatry, but one can agree with Shera that, in spite of their importance and frequency, renal lesions in psychotics do not receive the prominence and attention that they deserve.

It is obvious, of course, that any type of renal lesion might occur in a psychotic patient, and in particular the vascular types of nephritis, hyperpietic and senile or atheromatous, might be expected to be comparatively common. Such cases as the following are frequent enough:

Case 1.—Male, æt. 60.

History.—Gradual development of marked confusion with excessive restlessness and incoherence during the preceding twelve months.

Physical examination showed general flabbiness, the tongue was coated and tremulous, the teeth very carious. Heart-sounds clear, but arteries thickened and blood-pressure 190/120, pulse-rate 90 per minute. Pupils small and reactions sluggish, tendon reflexes exaggerated and inco-ordination of muscle movements present. The urine contained albumen and casts, and some pus-cells. The fluids were negative to tests for syphilis. Investigation showed the blood-urea to be 101 mgrm. %. This fell under treatment to 67 mgrm. % in one month, and improvement continued.

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CASE 2.—Male, æt. 66.

History.—Gradual onset of dementia during the last seven years.

On examination he was confused and restless and complained of various persecutions, often attempting to beat off imaginary tormentors. The heart was enlarged and the blood-pressure high. The urine contained albumen. He had several uræmic fits following admission and died in one month. A week before his death the blood-urea was 190 mgrm. %.

Post-mortem examination confirmed the diagnosis of chronic nephritis and cardio-vascular degeneration.

Since tongue tremor, pupil irregularities and exaggerated tendon reflexes, with general flabbiness, are common in these cases, they may have to be differentiated from general paralysis, and occasionally even the examination of the fluid is not decisive, as the following case illustrates :

CASE 3.—Female, æt. 48.

History.—Two years before admission a change of character was noticed. She became unstable and worried about trifles, and suffered from periodic colds. Four months before admission she became depressed, and a month after this began to express grandiose delusions, which were prominent on admission, together with some confusion and restlessness.

Physically she was fat and showed a slight general icterus. The mouth was dirty and the tongue furred. The pupils were small and equal, and all reactions sluggish. Tendon reflexes exaggerated, blood-pressure 120/70, pulse-rate 65. The urine contained albumen. The cerebro-spinal fluid gave a positive Wassermann reaction, although the blood was negative. The Lange gold test read 2331000000/05

Treatment was commenced with mercury and potassium iodide. The patient showed clinical improvement and the icterus faded, but following a seizure two months after admission, injections of N.A.B. were commenced. Further seizures occurred, and the blood-urea was found to be 91 mgrm. %. The fluids, on further examination, gave negative Wassermann reactions, and the patient later died in uræmic coma.

Post-mortem examination showed ulceration of the mouth and colon, while on microscopical examination fatty degeneration and cloudy swelling of the liver and subacute nephritis with superadded acute nephritis were found. There were no gross brain changes.

The difficulties of such a case as this are not so very exceptional. Moreover, uræmic states where the usual symptoms are lacking are well known and have been frequently alluded to in the past. MacAdam (9) in a recent communication again draws attention to latent uræmic states, where progressive languor, fatigue, loss of appetite and perhaps anæmia are present without albuminuria and probably without cardio-vascular changes, and the finding of a blood-urea between 100 and 200 mgrm. % proves the only means of establishing a diagnosis. Languor, fatigue, loss of appetite and anæmia are common enough in psychotic histories, frequently as precursors to confusional insanity, and the need for routine blood-urea estimations in such cases is apparent.

The recognition and treatment of even comparatively mild cases of renal damage is also very important sometimes, as is well shown by the following note :

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CASE 4.—Female, æt. 52.

History.—This patient had been a worker in a mental ward of a Poor Law Hospital for six years, but progressive dementia had made her quite incapable of any voluntary effort, and she was certified.

On admission she was dull, lethargic and confused, almost stuporose.

A week after admission the blood-urea was 65 mgrm %. The sole treatment adopted was the administration of a low protein diet. In fourteen days the blood-urea fell to 43 mgrm. %, and after a month it was 36 mgrm. %. She became a placid and useful worker, and is quite suitable for a parole ward.

Confusional Psychoses.

It will be apparent, from what has been said, that high blood-urea levels in psychotics are most commonly found in the confusional group.

In this investigation of 30 successive cases labelled "confusional insanity", consisting of 11 males and 19 females, only 13 gave blood-urea findings that were always within normal limits. All patients were put on a fluid diet, and received a minimum of 80 oz. of fluid a day for at least three days before the blood-urea was estimated. Of the 17 cases with raised blood-urea levels, 6 gave figures between 45 and 70 mgrm. %, but none of these suffered from nephritis, although in each case the diet was arranged and graded to reduce the level to normal and to keep it so.

The remaining 11 cases, of whom 7 were males, suffered from chronic nephritis. Five of these had a blood-urea between 100 and 200 mgrm. %, and 6 between 60 and 100 mgrm. %, while confirmatory signs were found in all, both clinically and by laboratory tests. In no case did the treatment by diet and drugs fail to reduce the urea levels to within normal limits, but the ultimate result was generally not very satisfactory, since 6 of these 11 patients died, sometimes after striking clinical improvement followed by relapse, while only 5 of the 19 patients without nephritis died.

TABLE I.—*Confusional Psychoses.*

	Cases.	Deaths.
With normal blood-urea	13	5 (26%)
With raised blood-urea, but without nephritis	6	
With raised blood-urea and nephritis	11	6 (55%)

It would seem that in the presence of chronic nephritis the prognosis for a confusional insanity is distinctly worse, and the frequency of azotæmia in these cases demonstrates the importance of routine blood-urea estimations in such cases.

Mania.

Azotæmia is not confined to cases of confusional insanity. In 15 successive cases of mania 11 had normal blood-ureas. The average reading for this group of 11 was 27 mgrm.% soon after admission and after a month it was 33 mgrm.%,

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some cases showing marked increases as from 22 mgrm. % to 44 mgrm. %, the result probably of insufficient food before admission and regular feeding afterwards. Age and blood-pressure did not seem to affect the results.

The remaining 4 cases had raised blood-urea levels, above 60 mgrm. %, soon after admission. One of these was a typical case of mania and had chronic nephritis, and the illness ran a course similar to any other case of mania.

The 3 others, without evidence of chronic nephritis, were all complicated by a degree of confusion, and they all improved very rapidly on a strict milk-and-water diet, and in one or two weeks were clear of all confusion, but still hypomaniacal. This state of hypomania continued for a few days or weeks before recovery, but the total duration of the illness was much shorter than is usual in ordinary maniacal attacks. One of these three was a certified patient for the fourth time, having had attacks of mania during two puerperal periods and also an attack of melancholia.

The clinical impression gained from these cases was strongly in favour of the diagnosis of a temporary toxæmia, including renal toxæmia, precipitating a psychosis in a manic personality. The recognition of the azotæmia and its treatment by a milk-and-water diet with fruit-juice and glucose did a great deal to hasten their recovery.

Acute Delirious Mania.

Blood-urea estimations in 3 cases of acute delirious mania suggested that these results were useful guides in prognosis. Originally the figures were high and remained so in the fatal cases, but fell to normal in one that recovered.

All 3 patients showed an acute restless delirium that was almost uncontrollable, 2 of them kept up a noisy and incessant flow of talk which showed well-marked flight of ideas (Cases 5 and 6), but the third, Case 7 in the table, was completely silent throughout and rather suggested a schizophrenic delirium in appearance. All were thin, bruised and seriously ill on admission and Case 7 had advanced pulmonary tuberculosis. The temperature of each ranged about 100° F., and the pulse-rate about 120 per minute. The mouth was foul and the tongue dry and coated, the bowels constipated and the sphincters uncontrolled. The pupils were extremely dilated and sluggish in their reactions ; the knee and ankle-jerks were completely absent except in Case 7, where they were exaggerated. The blood-pressure was low, about 95/60, and the urine contained albumen and an abundant deposit of urates, with acetone in addition in Case 5.

Cases 6 and 7 died and Case 5 recovered.

The use of blood-urea estimations is obvious from this table (Table II), for it is useless giving protein foods until the blood-urea is falling. Every effort was made to give these patients sufficient fluid, so that the high figures were probably due to renal toxæmia and not to dehydration. Two deaths

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in 3 cases may not seem to say much for the diet of 2 parts water to 1 of milk with glucose which was given to these cases, but the condition of the lungs found post-mortem in Case 7 made it a matter of wonder that she could have lived so long.

TABLE II.—*Blood-urea in Acute Delirious Mania.*

Days after admission.	Blood-urea in mgrm. %.		
	Case 5, æt. 19.	Case 6, æt. 24.	Case 7, æt. 30.
2	—	90	—
3	89	—	132
4	—	81	—
5	—	Died	—
6	—	—	121
9	—	—	Died
16	60	—	—
30	46	—	—

Melancholia.

High blood-urea levels were rare in 40 cases of melancholia and the level did not seem to be affected by the variety, whether simply depressive, acutely agitated or confused, nor by the blood-pressure, but there was a slight rise with advancing age, averaging 25 mgrm. % at 35 and 32 mgrm. % at 55.

Five patients had a blood-urea of 40 mgrm. % or a little over, which fell in one or two weeks to an average of 30 mgrm. %. One case only had a persistently high reading, varying between 50 and 90 mgrm. %. This patient steadily wasted and died. There was a history of attacks of jaundice and the passage of gall-stones, and advanced hepatic damage was found post-mortem. Two patients, with a history of refusal of food, had a blood-urea of less than 20 mgrm. %, and this rose to 33 and 39 mgrm. % respectively when tube-feeds were instituted.

Other Results.

In 9 cases of schizophrenia the blood-urea varied between 34 mgrm. % and 18 mgrm. %, with an average of 28 mgrm. %,—results appearing to be independent of the age and blood-pressure. Two further cases of schizophrenia gave abnormal results. In 1 a blood-urea of 53 mgrm. % fell to 18 mgrm. % in a fortnight—a case of azotæmia due to starvation. In the second case chronic nephritis and high blood-pressure were present, and the blood-urea was persistently in the neighbourhood of 40 mgrm. %.

In 11 cases of non-systematized delusional insanity the blood-urea varied between 21 mgrm. % and 48 mgrm. %, averaging 32 mgrm. %, and the higher readings were obtained in the older patients and in those (3) with raised blood-pressure.

In 9 senile cases the results varied from 25 mgrm. % to 50 mgrm. %,

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averaging 37 mgrm. %. The blood-urea was rarely below 40 mgrm. % in those with high blood-pressure, even if albumen was regularly absent from the urine.

Normal readings were obtained in several cases of post-encephalitic psychosis and in mental defectives.

Puerperal Psychoses.

In 9 of 11 cases of puerperal psychosis the blood-urea was above normal soon after admission. Table III is an average table compiled from these cases :

TABLE III.—*Average Puerperal Reading.*

Day of puerperium	.	14	.	16	.	18	.	20	.	22	.	24
Blood-urea in mgrm. %	.	51	.	46	.	44	.	38	.	35	.	23

The blood-urea normally falls before term and rises after labour. This rise is usually apparent between the tenth and twentieth days, the subsequent fall being independent of ordinary variations in diet, whereas in many cases of puerperal psychosis a satisfactory fall is dependent on a strict limitation of diet during the first few days in hospital.

The Blood-urea during the Malarial Treatment of General Paralysis.

The recognition, on purely clinical grounds, of the exact moment at which to terminate a course of malarial therapy is often difficult. To wait for such signs as persistent vomiting, collapse, cyanosis, seizures and jaundice is a dangerous procedure, and a convenient laboratory estimation of the degree of toxæmia or exhaustion would be of great service. Nicol (10) states that if more parasites than 35 are found in 25 fields on microscopic examination of a thin blood-film, then the infection should be stopped. The thickness of a thin blood-film is rather variable, however, and I have frequently seen counts much larger than 35 in 25 fields persisting for several days without danger. The blood-pressure falls during malarial therapy, but usually the fall is early and the level thereafter stationary, so that its measurement is not of any great use as an indication for the cessation of the pyrexia. In France the degree of azotæmia is often used as a measure of the toxæmia, and this is an excellent guide to the state of the patient's resistance to his infection in a majority of cases.

Both the blood-urea and the number of parasites per field tend to rise during the course of malaria, until a roughly stationary level is reached. This continues as long as the patient is holding his own with the infection, but once the malaria gains the ascendancy there is a progressive rise in the level of both; it is my experience, however, that the blood-urea level is the first to rise, and therefore is a more sensitive and reliable index.

Table IV is a typical picture of the changes in the blood-urea, the parasite count and the blood-pressure met with during treatment by malarial pyrexia.

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TABLE IV.—*Case* 8, *female, æt.* 32.

Day.	Blood-urea in mgrm. %.	Malarial parasites in 25 fields.	Blood-pressures. Systolic.	Diastolic.	Pulse-rate.
Before	39	—	122	88	85
1	46	0	—	—	—
5	—	20	90	45	95
7	49	37	—	—	—
9	—	61	90	60	80
11	—	60	—	—	—
12	52	61	90	60	70
14	59	44	80	50	72
15	71 (quinine)	77	85	55	75
18	47	—	—	—	—
22	37	—	90	50	80
24	29	—	115	80	75

In this table, the first day represents that on which the first rise of temperature to 102° F. or more occurred. The patient was seriously ill on the 15th day when quinine was given.

The following table shows the findings in two cases of general paralysis where death occurred, in the first from malaria, after quinine, even in the largest doses, had failed to stop the infection and daily rigors continued unabated, and in the second from progressive toxæmia following the cessation of malaria.

TABLE V.

Day.	Case 9. Blood-urea in mgrm. %.	Case 9. Malarial parasites in 25 fields.	Case 10. Blood-urea. in mgrm. %.	Case 10. Malarial parasites in 25 fields.
Before	38	—	38	—
2	36	4	49	0
7	76	15	43	27
8	59	30	—	13
9	78	24	70 (quinine)	29
10	81 (quinine)	28	—	—
11	91	56	—	—
13	Died	—	—	—
14	—	—	99	—
16	—	—	122	—
18	—	—	177	—
21	—	—	Died.	

In this table also, the first day is taken as that on which the temperature first exceeded 102° F.

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As a rule the blood-urea should not exceed 70 mgrm. % during malarial therapy, for increasing toxæmia may kill the patient despite the administration of quinine if this level is exceeded. When the blood-urea is more than 45 mgrm. % it should be estimated daily, for the rise is often rapid and a day missed may be of vital importance.

No outstanding results were found in cerebral syphilis, or during treatment with N.A.B. or other anti-syphilitic drugs.

The Blood-urea during Non-specific Protein Therapy.

It is well known that during the pyrexia of non-specific protein therapy there is a degree of nitrogen retention in the blood. This azotæmia is usually more marked in confused patients who are obviously physically ill. I have not met with any very high blood-urea levels during treatment with T.A.B. vaccine, chiefly because severe reactions are avoided, in the belief that the dangers of sudden heart failure and of hepatic or renal damage are very real, and that results are equally satisfactory with a series of maximum temperatures of 102° F. or even less; but I consider that where hepatic or renal insufficiency is suspected the blood-urea should be estimated before injection and at six hours and twenty-four hours after, a high and prolonged urea retention being a danger-signal.

The following table compares the findings in a healthy schizophrenic, æt. 23, and a confused alcoholic, æt. 34. The maximum temperature in each was 102° F.

The blood-pressures are shown, and although there is an initial rise of systolic pressure followed by a fall, the diastolic pressure falls almost uniformly, and the blood-urea is roughly inversely proportional to it.

TABLE VI.—*Case* 11: *Schizophrenic female, æt.* 23. *Case* 12: *Alcoholic Confusion, female, æt.* 34.

Time.	Case 11.			Case 12.		
	Blood-urea in mgrm. %	Blood-pressure.		Blood-urea in mgrm. %	Blood-pressure.	
		Systolic.	Diastolic.		Systolic.	Diastolic.
Before injection	28	120	80	28	90	60
2 hours after injection	28	130	78	35	95	55
4 ,, ,,	36	140	70	41	85	55
6 ,, ,,	34	108	60	45	70	40
8 ,, ,,	39	98	52	40	80	45
10 ,, ,,	33	110	60	46	75	45
24 ,, ,,	22	120	85	39	85	55

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The possible uses of blood-urea estimations during treatment with T.A.B. vaccine are fairly evident from this table.

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Clinical Notes and Cases.

THE ABSENCE OF THE PERONEUS TERTIUS IN A MONGOLOID IDIOT.

By NEIL MONTGOMERY, D.P.M., and DAVID K. BRUCE, D.P.M.,
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With a comment by F. G. CROOKSHANK, M.D., F.R.C.P.

M. B— was admitted to Storthes Hall Mental Hospital in December, 1927. Her age was then 41. She showed marked stigmata of mongolism, the facies was typical, the tongue was fissured, and she readily took up the "Buddha" position when sitting.

Her mental state was one of idiocy. She was ineducable, inarticulate, and unable to fend for herself in any way. She suffered a good deal from chest complaints, and during her sojourn here had two attacks of lobar pneumonia. The last one proved fatal, and she died on January 19, 1933.

The most interesting feature of the *post-mortem* examination was the absence on both sides of the peroneus tertius muscle. The ligamentum teres on each side was very poorly developed.

We are indebted to Dr. C. W. Ewing, Medical Superintendent, Storthes Hall Mental Hospital, for permission to publish the particulars of this case.

NOTE BY F. G. CROOKSHANK, M.D., F.R.C.P.

In *The Mongol in Our Midst* (third edition, 1931) I have shown that certain homologies obtain between our indigenous mongoloids (whether imbecile or not) and the orangs, on the one hand, and racial mongolians on the other. None of the observations made and recorded by me has been invalidated, although many have refused to accept the proven homologies as other than "superficial", and have offered suggestions by way of "explanation" incompatible with those which I have put forward.

The difficulties in the way of verifying my thesis—that completer investigations than have hitherto been made would extend the known range of these

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homologies—are many. *Ex hypothesi*, since imbecile mongoloids are "confusion products" rather than "pure reversions", not every imbecile mongoloid subjected to anatomical dissection should be expected to reveal definite orangoid homologies. But the clear results of the *post-mortem* examination made by Drs. Montgomery and David Bruce are important, for the reason that, some years ago, I ventured to predict that such results would be obtained if due investigation were made.

On pp. 263, 264 of the book in question the chief points now relevant are carefully set out. But some amplification may here be made. It has long been stated by comparative anatomists that the peroneus tertius (which tends to maintain the foot in the normal human position) is an exclusively human muscle, not found in the great apes. But, while human anatomists admit that this muscle is sometimes weak, or even absent in human beings, I cannot find that, until recently, any notice has been taken of the *racial* incidence of such abnormality. However, Kurz, of Münster.-i.-W. (for many years Teacher of Anatomy in Shanghai), has shown conclusively, what Stevenson of Peking has told me, that the peroneus tertius is not infrequently absent from the Chinese cadaver, which sometimes, very remarkably, displays a *peroneus parvus*—a muscle hitherto considered peculiar to the orang.

The importance, from my point of view, of these observations, and of Drs. Montgomery and Bruce's confirmation of my inference—that the peroneus tertius should be found absent in many imbecile mongoloids—is reinforced by the lately reported discovery of the peroneus tertius as present, after all, in the gorilla. (I say "reported", for I have not the full reference available.)

In a word, the "peroneus tertius test" of my observed and postulated series of homologies between the mongoloid, the mongolian and the orang is (so far) found to give "positive" results, and the affirmation that these homologies are "superficial only" is (so far) weakened. But the weakness of the ligamentum teres reported by Drs. Montgomery and Bruce is also important. Many years ago I found the ligamentum teres completely absent from the cadaver of a mongoloid baby that I examined at the Belgrave Hospital for Children, as I suspected would be the case.

This structure is normally absent from the orang, but I cannot say that it has often been reported as absent from racial mongolians. But every now and then the head of a femur is found, amongst mongolian peoples, to present a feebly-marked pit, and sometimes this pit is absent.

Whilst grateful for the independent vindication of at least one of my inferences by Drs. Montgomery and Bruce, I would venture to express a double wish, or aspiration: *First*, that all those who have the opportunity of dissecting "true" imbecile mongoloids would make a point of investigating those structures which, in mongolian races and in orangs, are found to differ in type from that obtaining in negroes and/or in gorillas; and *secondly*, that systematic anatomists, when they meet, in dissections of the "European"

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cadaver, with "abnormalities" which are "normal" to orangs and frequent in mongolians, should pay some attention to the general anthropological "type" and/or the racial origins of the subject.

If the existence of orangoid "abnormalities" amongst European or "white" subjects is found generally to coincide (as I believe it does) with a mongoloid facies, or other characteristic, an important addition to our knowledge will have been made.

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Medico-Legal Note.

ANOTHER singular case in Kenya Colony is reported in the *Times* of May 22.

A boy, æt. 14, was playing with a pointed stick, apparently throwing it after the fashion of the javelin used by athletes. The stick struck a tree and glanced off, killing another lad. The culprit was brought before the tribal elders, who decided that, in accordance with custom, he must pay "blood money". The boy pleaded that he was unable to find the money. He was then informed that it was his duty to commit suicide. He fled to the forest, but was recaptured. Having been taken to a tree, he was given a rope by the elders, told to fasten the rope around his neck and to climb the tree. He was then instructed to jump, and obeying this order he hanged himself. Seven of the elders were brought before the High Court at Nakuru, and were sentenced to terms of imprisonment, varying from two to four years, for "counselling and aiding the boy to commit suicide".

To counsel or to assist another person to commit suicide would amount to murder in English law. The present case illustrates the difficulty of employing British standards when an act, which would be criminal under those standards, is dictated by native custom and belief. The case may be compared with the custom of "suttee" in India, and with a Rhodesian case reported in this journal in 1923.

M. HAMBLIN SMITH.

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Part II.—Reviews.

The Energies of Men: A Study of the Fundamentals of Dynamic Psychology. By WILLIAM MCDOUGALL, F.R.S. London: Methuen & Co., Ltd., 1932. Pp. 395 + ix.

This book is the outcome of an endeavour to present in one volume of moderate compass the essential parts of its writer's comprehensive *Outline of Psychology* and *Outline of Abnormal Psychology*. These two volumes were almost too bulky for the use of the student as an introductory text-book, though they are indispensable for the purposes of reference and advanced studies. This work is concerned almost exclusively with two great problems: What is the native endowment of man? How does that endowment, through growth, become the many-sided marvel, a human personality? As might be expected, the answers given to these questions in this book provide the student with a thoroughly dynamic and practical appreciation of the inherited and environmental factors which determine the reaction of the individual to life.

The author explains in his preface that in his earlier efforts to throw light on the nature of man he has found that the usage of the term "instinct" has involved him in endless controversy. In this book he has used this term in a stricter sense, and has preferred the word "propensity" to designate those factors of our constitution which he formerly called "instincts". This concession to his critics, he observes, does not imply any radical change of view, but it does meet an objection to the wider usage of the term "instinct"—an objection not without a certain weight; and it enables him to treat the difficult instinct-intelligence problem in what he believes to be a more satisfactory manner than he had previously achieved.

Prof. McDougall does not discuss *Gestalt* psychology at any length, but he is fully alive to the importance of this new development in psychology, and comments favourably upon the principles it aims to develop. We feel, indeed, that much of the teaching of the new school is implicit in the psychological principles formulated by Prof. McDougall himself in his various contributions to psychology.

As in the majority of his books, Prof. McDougall has many interesting things to say about animal behaviour in this, his most recent work. His studies on these lines are both pleasing and instructive.

The reader of this attractive book cannot but feel how much British psychology has been enriched by the work of its author. His achievements cannot here be outlined, but it must always be remembered that when, as far back as 1905, he defined psychology as "the positive science of conduct or behaviour", he gave a new orientation to a more or less academic science, having but little bearing upon the realities of life. Many years after this definition was formulated it was adopted by the extreme behaviourist, with the result that Prof. McDougall felt he could not have his definition identified

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with a school of psychology which ignored the method of experiential observation or introspection. As far as we can gather from his writings, it would seem that the definition the author of this book prefers is : " Psychology is the science which aims to give us a better understanding and control of the organism as a whole ". It would be difficult to formulate a more suitable definition than this.

It can certainly be claimed that Prof. McDougall has greatly enriched our knowledge of psychology as defined above, and we can confidently recommend this work, which gives a summary of his most recent views.

H. DEVINE.

A Thousand Marriages : A Medical Study of Sex Adjustment. By R. L. DICKINSON and L. BEAM. Foreword by HAVELOCK ELLIS. Williams & Norgate and Baillière, Tindall & Cox, 1932. Pp. xxvi + 482. Price 21s.

This is one of a sequence of twelve volumes to be published under the auspices of the National Committee on Maternal Health, Inc. The material has been contributed by R. L. Dickinson, a distinguished American gynæcologist and obstetrician, and the book—excepting one chapter—has been written by Miss Beam.

Marriage has already been studied through the *questionnaire* (Katherine B. Davis) and through the *interview* (G. V. Hamilton). It is approached here from a new angle—the case-histories of a gynæcologist. In about 1,000 of his cases—drawn mainly from the professional classes—he was able to obtain sex-histories ; the average period of observation was seven years, but in some cases it extended over forty years.

The subjects of the study were classified into brides, widows, separated or divorced women, and those who had adjusted sufficiently well to marriage to continue living with their husbands.

Dr. Dickinson attempts to correlate emotional with pelvic states ; he contends that vulva, clitoris, vagina and breasts document sex habit and practice, and that this documentation is corroborated by behaviour during interview and by physiological reflexes during pelvic examination. In the main, his conclusions are commonsense, but one might contest the changes that he considers characteristic of auto-erotic practice if only on a question of scientific method, for it was only when a patient who did not spontaneously confess to such habits displayed these changes that he made further inquiries.

One of every two women who continued to live with their husbands found her marriage sexually satisfactory ; the other suffered from frigidity, dyspareunia or some form of unhappiness.

Those who were happily adjusted averaged coitus twice weekly, and despite a popular belief to the contrary, the older couples practised coitus as often as the younger.

Unusually passionate women made up a small proportion of the total. A study of them revealed no unusual factors ; they were normal, healthy, respectable people of high general capacity.

Dyspareunia is an active refusal of coitus, frigidity a passive refusal. The frigid wife is verbose, according to Dickinson, and a great talker about her husband's faults and her own wrongs ; the dyspareunic wife lets her symptoms express her aggressive feelings.

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The widows resolved themselves into three groups. Those under 40 were often ailing, discontented and full of vague desires; those between 40 and 60 suffered from strong conscious sexual desire, but gratification of this was made difficult by a tendency to over-idealize the husband's memory; those over 60 resorted to auto-erotism, but would rarely confess to it.

The typical bride was found to be "in a state of erotic confusion". According to the authors, "the evidence is that auto-erotism is typical experience but that its continuance in marriage is exceptional". The present reviewer would doubt the latter part of this statement.

A subject one would like to see further discussed is the effect of the age when coitus is first experienced on the subsequent sexual adjustment and its degree of success.

This is an experimental study of marriage, intended to help doctors and others in the diagnosis of everyday sex problems. Although it re-states much that is obvious, it will be of value because of the fullness of the case-histories, because of the authority that matter statistically presented will have with some people, and because of the thesis which it presents, namely, that if we are to prevent or treat maladjustment in marriage, we must systematically study case-histories of success and failure. HENRY HARRIS.

Filterable Virus Diseases in Man. By JOSEPH FINE, M.D., B.Sc., D.P.H.Glas., D.T.M.Liverp. Edinburgh: E. & S. Livingstone, 16/17, Teviot Place, 1932. Pp. 144.

Dr. Fine states in his preface that the objects of this book are to present in a compact form the essential facts of Virus Diseases in Man from a pathological and bacteriological as well as a clinical standpoint; to present the subject in a systematized manner; and to review the position in cases of alleged virus disease, where leading workers are in disagreement.

It would be difficult indeed, for anyone to succeed in making such a presentation within the limited compass of 144 pages, but Dr. Fine has gone far towards achieving his object. One cannot help feeling, however, that the book is written essentially from the bacteriological point of view. The clinical matter is stated only very briefly, and there is a regrettable tendency to avoid detailed descriptions of clinical type by indicating in a word alternative terminations in some of the diseases described. For example, the clinical aspect of encephalitis lethargica is dismissed in seven lines. The pathology of it is dealt with in a paragraph of about twice that size, while eight pages are devoted to a description of animal experimental work. From the point of view of the psychiatrist, the book is only of limited interest. The diseases which may be said to fall within the neuro-psychiatric province are confined to acute anterior poliomyelitis, acute disseminated encephalomyelitis, rabies, encephalitis lethargica, and disseminated sclerosis, although possibly influenza, which is also described, may, in virtue of its not uncommon mental sequelæ, also be of interest.

The classification of these diseases is original and most helpful. A very complete bibliography appears at the end of each chapter, which incorporates the references of all the well-known works on this subject. There is an interesting synopsis of the recent controversy on the virus theory of disseminated sclerosis. It is interesting to note that the author does not, by any means, uncritically accept the view that encephalitis lethargica is a virus

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disease, and his summary of the relationships between this alleged virus and that of herpes is a well-balanced and judicious one.

As a summary embodying a valuable list of references, the book will be found of considerable assistance in obtaining detailed information rapidly, though it is not, and is not intended to be, a complete account of the subject.

IAN SKOTTOWE.

Studies in the Psychopathology of Crime. By BEN KARPMAN, M.D. Washington, D.C., U.S.A.: The Mimeoform Press, 1933. Pp. xvi + 1042. Large 8vo, 8½ × 11. Price $12 net, prepaid.

This mighty volume emanates from St. Elizabeth's Hospital, at which institution the author is Psychotherapist. At the outset it must be understood that the book is exactly what its title claims it to be. It is not a treatise on crime in general or on criminals; it simply presents case-studies of certain patients who have come under the observation of the author. Further, it contains only five such case-studies. Whether it is worth while to present such a small number of cases at so great a length is a question to which we shall, later, attempt to supply an answer.

The scheme adopted is to give, for each case, an account of the routine material obtained from the patient at his admission and during his stay in hospital, together with such outside information as could be had. This is followed by the case study proper, as obtained from the patient by means of a more intensive psychogenic approach. Opinions formed by attendants and other patients are given; and in two cases there are most illuminating transcripts of letters written by the patient. Finally, a brief epitome sums up the main factors in the case.

More than half the book is taken up with the patients' own accounts of their cases, accompanied by their comments upon social conditions in general and police methods in particular. Many readers will seize this point, and will ask whether, and to what extent, such material may be relied upon. The dictum that men "may lie" is as true now as when Hobbes expressed it; and criminals are not specially exempt from this characteristic. But it must be remembered that, as Dr. Karpman says, "lies have psychic reasons behind them, have their definite place in the mental life of the individual, and, as a rule, are products of the unconscious". Again, it must be kept in mind that it is the patient's opinions of his environment which are of importance so far as he is concerned. The patient reacts to his emotions irrespective of whether the situation which elicited those emotions was real or imaginary. It is probable that much of the material consists of fantasy. But fantasy plays a large part in the life of the non-criminal member of society. If a fantasy provides energy sufficient to compel the individual to indulge in certain kinds of behaviour, then (again quoting Dr. Karpman) "it is not only a psychic fact, but a fact in every sense of the word".

It would, of course, be impossible to give, within the limits of a review, any detailed account of the individual cases presented to us. But a brief summary of the cases will serve to give an idea of the scope of the book. Case 1 is an example of over-compensation for a deep sense of defeat, accentuated by the manner in which the patient was treated by the legal processes to which he was subjected. Case 2 illustrates a drifter, whose life is one long childhood.

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Such persons drift into crime as a matter of course. Their emotional development does not keep pace with the growth of their mental capacities, and they are driven by a perpetual unsatisfied urge. Case 3 is an instance of criminality arising out of homosexual difficulties. Case 4 represents a man drawn into crime by circumstances too powerful for his neurotic personality to oppose successfully. There is also evidence of a strong mother-fixation. And in Case 5 a weakly childhood produced a deep sense of inferiority, and compensatory fantasies induced peculiarities of conduct which gradually passed into criminal behaviour. Although the conditions indicated in the five cases are very far from exhausting the possible causative factors of crime, examples of the described conditions, or combinations of them, occur every day in criminal practice.

One at least of the five patients displays a considerable degree of insight, and gives a really able discussion of the adolescent's gradual progress towards confirmed criminality, and of the varied nature of the views taken of the criminal by other sections of society. All five have much to complain of in the way in which their cases were handled, especially in the early stages. Much of this complaint is, of course, " common form ". But there can be little doubt that when once a man has been convicted the dice are weighted against him for the future. His position on release from prison is a very hard one. As Dr. Karpman points out, we require a system of " after-care ", and this should not be left to voluntary agencies.

All the case-histories give a most lurid and appalling account of the conditions in American prisons and reformatory institutions, and to a less extent in mental hospitals. None knows better than the present reviewer how much discount has to be allowed from stories of this kind. But some of the evils described are the direct and inevitable result of over-crowding, and that such over-crowding exists in American prisons is officially admitted. Another social evil referred to is the widespread disrespect for law in general, which has been produced by the contemptuous evasion of the Volstead Act, and the corruption which has accompanied this. Very interesting details of the traffic in illicit drugs are given, and there is a striking account of the proceedings at " cocaine parties ". We also have a good description of the gradual growth of addiction in a drug-taker, and a graphic account of the abstinence symptoms occurring after deprivation of the drug. One patient states, epigrammatically, that " women, gambling and dope " are the three main causative factors in criminality.

No one who is directly concerned with offenders against the law can afford to neglect this book. On almost every page he will find something to provoke thought, and many unanswered questions are indicated in all the five cases. The evil effects of idleness, both in prison and outside, are stressed ; the superficial character of newspaper accounts of crime is pointed out ; the nomadic habits of certain criminals are illustrated by charts showing the wanderings of one of the cases. One patient maintains that a rightly directed education is the only way in which the " crime problem " can be solved, and urges that physicians should always be selected as governors of prisons. This latter suggestion could only be effective if the governor were relieved of much routine administrative work which now falls upon him.

We have nothing but praise for the enormous industry which must have been employed by Dr. Karpman and his colleagues in the production of this volume. We believe, and Dr. Karpman urges, that the only way in which the phenomena of crime can be successfully studied is by the patient, intensive

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investigation of individual cases. The book shows what can be accomplished in this direction. It will be objected that such an elaborate study cannot be conducted in every case, even if our existing prison staffs were vastly increased. But a modest increase in staff would enable something to be done in this way; and the additional expenditure would be amply justified, even on the lowest, the financial, ground. For there can be no doubt that "uninvestigated offenders are the most expensive luxury in which any community can indulge".

The question of the prevention of crime must not be overlooked. Abnormal psychic reactions are but exaggerations of the normal; and underlying neurotic motives, which might have been dealt with earlier, are the true causative factors in many cases of habitual criminality. Many of our neurotics are costly "carriers", and the evils which they produce could be, to some extent, mitigated by well-devised preventive measures.

It only remains to say that the edition is a limited one, and that the book is sold only to members of the legal, medical, and other professions having an interest in social problems. M. HAMBLIN SMITH.

Genetic Principles in Medicine and Social Science. By LANCELOT HOGBEN. London: Williams & Norgate, 1932. Pp. 230. Price 15s.

THIS important contribution is especially useful and impressive as a warning against misapplied eugenics. Hogben attempts to separate the wheat from the tares in what we know of human inheritance. In one half of the book he considers how human genetics can best be studied quantitatively; in the other half he inquires how far—with our present knowledge—we may legitimately introduce genetical concepts into social science and politics.

He concludes that we need more research rather than more propaganda, scientific workers rather than legislative interferers, the atmosphere of the laboratory rather than that of the drawing-room, and an emphasis on the medical rather than on the political aspect of the problem.

Unfortunately, eugenics has got a bad name in many quarters. It has become identified at various times with snobberies of various kinds, obstruction to educational progress, anti-feminism, anti-semitism, colour prejudice and other movements, justification for which—if any—certainly does not derive from modern biology.

The very first duty of eugenics is to distinguish carefully between social and organic heredity. The mechanism of the one is education; of the other, sexual reproduction. Too many biological writers have failed to allow sufficiently for the former or have overlooked it altogether.

Hogben suggests that first studies should concern themselves with problems which eliminate, as far as possible, the elements of social heredity and that they should be quantitative. A study, such as that of pedigrees, for example, while it provides useful raw material for genetic analysis, cannot in itself supply crucial evidence.

A splendid opportunity to map human chromosomes and localize human genes is offered by the study of such serological differences as determine the various blood-agglutination groups, and by the correlation of these blood-groups with other conditions that are found to be associated with them. Colour-blindness—found in every twentieth male—affords a similar opportunity of investigating points of reference in the *X* or sex chromosome, being a disease which obeys Nasse's Law and follows that chromosome.

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Hogben rightly reminds us that mental defect is not a single clinical entity ; that all the evidence points against such mental defect as is hereditary being due to a single recessive gene ; and that insufficient attention has been paid to the pre-natal environment as a factor that may simulate the influence of heredity.

He concludes—rather too readily perhaps—that late child-bearing is a *major* ætiological factor in mongolism, and that order of birth may exercise an important influence on the physique of children. This he deduces from the facts that the average age of the mothers of mongol children is about 40, and that such children appear more often after several previous pregnancies.

In the chapter on " The Growth of Human Populations ", Hogben criticizes Pearl's theory that human population growth is a biologically self-regulating process fitting neatly into a graph which Pearl used to describe the growth of populations of the fruitfly—*Drosophila*—cultured in pint milk-bottles. He considers that the factors inherent in social organization play an important part. One such factor is contraception, and on this he has some provocative remarks to make. He points out that the probability of offspring resulting from coitus depends upon at least four factors : (1) Fœtal viability, (2) viability of the sperm, (3) viability of the ovum, (4) and coincidence of the rhythms of sexual excitability and ovulation. Considering all the circumstances, Hogben suggests that the probability of conception, instead of being nearly unity, is more probably of the order of one-fiftieth or less. In the era of biological invention which we may now look forward to, the danger to expect is a decline of population—especially in the highly industrialized countries—rather than a Malthusian plethora.

In a valuable—now topical—chapter on " The Concept of Race ", Hogben points out that we do not as yet know what constitutes a race ; we have no evidence that such a thing as a pure race—in which no intercrossing between widely separated groups has occurred—exists ; we have equally little evidence that certain races, culturally more primitive, are inferior, or that intercrossing between widely-separated groups is likely to produce socially harmful consequences.

To modify legal and social institutions on the basis of our present ignorance about race is to build on a quagmire. This is sufficiently obvious from the facts that Hogben presents to us.

In eight important chapters Hogben succeeds in critically evaluating what we do actually know about human inheritance. To the experimental geneticist he recommends an attitude of scepticism, an emphasis on quantitative methods, and a selection of problems in which social heredity plays a minimum part. He warns against the social application of principles that are premature and have no biological justification.

The average psychiatrist will find the mathematical formulæ—with which the book teems—well beyond him. None the less, no one concerned with problems of mental disorder can afford to ignore such a contribution.

Although it is almost ungracious to criticize the style of the book, one cannot help feeling that it is unnecessarily involved even for the complex problems that are considered in it. HENRY HARRIS.

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Part III.—Epitome of Current Literature.

1. Anatomy and Physiology.

A New Type of Tonic Reflex [Un nuevo tipo de reflejos tónicos ; el fenómeno de la post-contracción o contracción catatónica de Kohnstamm]. (*Arch. de Neurobiol., vol. xii, Sept.–Oct.*, 1932.) *Villarta, M. C., and Culebras, A.*

This is a discussion of the phenomenon first described by Kohnstamm and later by Salmon. Following a vigorous contraction to which is opposed a resistance there appears, after a short latent period, a second involuntary contraction of a slow and sustained character. This reflex is originated by the excitation of the proprioceptive terminations in the muscle during its voluntary contraction. These reflexes are greatly increased in parkinsonianism. M. HAMBLIN SMITH.

Conditioned Responses in Animals other than Dogs. (*Psychol. Bulletin, vol. xxx, April*, 1933.) *Razran, G. H. S.*

The data offer a phylogenetic comparison of the characteristics of conditioning in various organisms and a check upon the generalizations current in the literature. Typical conditioning has been clearly demonstrated in organisms as low as infusoria. There is no evidence that the speed of conditioning becomes consistently greater with the ascent of the organism in the evolutionary scale. Prior to its final constant establishment a C–R passes through a transitional period of instability. C–Rs may become so firmly established that more than 100 non-reinforced applications are necessary for their disappearance. There is no convincing evidence that the speed of unconditioning is related to the phylogenetic position of the organism. C–Rs have been found to be retained over periods of 2–11 months of no experimentation in lower organisms. The positive evidence for conditioned immunity is suggestive, but not conclusive. M. HAMBLIN SMITH.

The Heel Tap : A Pathological Reflex. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, May*, 1933.) *Weingrow, S. M.*

The author describes a new sign for pyramidal tract disease. It consists of fanning, plantar flexion or any other movement of the toes following tapping of the heel. This sign only occurs in advanced involvement of the pyramidal tracts. It appears to be more often associated with the Babinski toe reaction than the Oppenheim, Gordon or Schaefer signs. G. W. T. H. FLEMING.

The Dermatomes in Man. (*Brain, vol. lvi, March*, 1933.) *Foerster, O.*

The dermatomes in man overlap to the same large degree as do those of the monkey. Resection of a single root in man is never followed by loss of sensibility. The tactile dermatomes are larger than the pain and thermal ones. Sometimes the resection of two contiguous roots produces analgesia and thermæsthesia only, but no tactile anæsthesia. The areas of vaso-dilatation produced by electrical stimulation of posterior roots are very similar to the areas of herpetic eruption.
G. W. T. H. FLEMING.

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The Rate of Conduction and Refractory Period of the Human Sensory Neurone. (*Brain, vol. lvi, March,* 1933.) *Golla, F., and Antonovitch, S.*

The authors found that the total refractory period of sensory nerves lasted $1{\cdot}7\sigma$ and the partial refractory period $2{\cdot}3\sigma$. A gradual increase of the sensory response was noted when the second stimulus fell within the partial refractory period of the first and the stimulation interval was gradually increased. A sensation of reduplication was noted when the two stimuli were $11\ \sigma$ apart. This sensation was accompanied by a diminution in the intensity of sensation. The mean velocity of conduction was found to be 75 m. per second. G. W. T. H. FLEMING.

On the Connections of the Medial Cell-Groups of the Thalamus. (*Brain, vol. lvi, March,* 1933.) *Clark, W. E. le G., and Boggon, R. H.*

As the result of experiments carried out on cats and rats the authors sum up their results as follows: The *nucleus dorsomedialis* sends fibres which run into the most medial fasciculi of the internal capsule, and then pass forward in close relation to the septum and the basal surface of the brain, to end in the granular cortex of the frontal lobe represented by areæ prefrontalis orbitalis lateralis, intermedia and medialis. This confirms results previously obtained in the rat's brain. It is interesting to note that in the higher primates, where this region of the cortex undergoes a remarkable expansion, the dorsomedial nucleus shows a progressive enlargement and a clear differentiation into lateral and medial elements.

The *nucleus submedius* sends fibres mainly to the lenticular nucleus *via* the internal capsule.

The *nucleus anteromedialis*: In a rat there was atrophy of this nucleus following a lesion of the frontal pole of the hemisphere.

The *nucleus centralis lateralis* is unaffected by lesions of the frontal pole. It is closely related to the commissural fibres of the thalamus.

The *nucleus centralis medialis* is an intrathalamic mechanism concerned with the linking up of other thalamic elements.

The *nuclei of the mid-line* send fibres to one another and by means of short relays of neurones to the hypothalamus. G. W. T. H. FLEMING.

Effects of Alcohol on the Chronaxia of the Motor System. (*Arch. of Neur. and Psychiat., vol. xxix, April,* 1933.) *Malamud, W., Lindeman, E., and Jasper, H. H.*

In two-thirds of the cases investigated by the authors the normal flexor-extensor chronaxia relationship changed, with a tendency towards equalization or even reversal. In these cases there were marked co-ordination disturbances, but no motor or mental changes. In the other third of the cases the normal chronaxia differences between flexors and extensors became exaggerated. In these cases the mental changes predominated, the co-ordination not being affected to any appreciable extent. G. W. T. H. FLEMING.

The Function of the Brain in Olfaction. I: Olfactory Discrimination and an Apparatus for Its Test. (*Journ. Comp. Psychol., vol. xv, April,* 1933.) *Swann, H. G.*

Rats were used in the experiments. There is seldom any loss in the capacity for discrimination after a rest of 14 days. The discrimination is stable even after over-training. No fatigue effect was noticed. The quickness with which learning takes place seems independent of the odour used as a positive stimulus. It is probable that the superiority of rats over human beings is qualitative rather than quantitative. Controls verify that olfaction and no other sense is involved.

M. HAMBLIN SMITH.

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Localization of Consciousness and Emotion. (*Amer. Journ. Psychiat., vol. xii, Jan.*, 1933.) *Alford, L. B.*

A series of cases exhibiting lesions in different parts of the brain was studied for changes caused in consciousness and emotion. In no lesion of the right hemisphere (in right-handed persons) was any consistent disturbance in these states observed. Not one of 33 cases of left hemiplegia exhibited confusion, and only three showed any emotional instability. Lesions of the frontal, parietal, occipital and temporal lobes on the left similarly caused no definite disorder of consciousness or emotion. It was eminently in the right hemiplegias, which generally arise from left capsular injuries, that confusion of consciousness was found. It would seem, therefore, that an area somewhere in the left base is concerned with the maintenance of awareness. All the conclusions are tentative.

M. HAMBLIN SMITH.

Laterality of Function. (*Psychol. Bulletin, vol. xxx, Feb.*, 1933.) *Downey, J. E.*

The problems involved are much more complicated than was at one time suspected. The statement that handedness is essentially a human characteristic appears to be dubious. Synergia is the natural condition in infancy; dissociation occurs only as a gradual development. The evidence is in favour of an increasing dextral lateralization up to the age of six years. The common assumption that left-handedness is inherited is difficult of proof, in view of the fact that monozygotic twins so often exhibit reversed handedness. The belief is wide that reversal of the native handedness in writing may cause a speech defect, but there appears to be but little evidence in its favour. Suggestions have been made that crossed dextrality or sinistrality may be connected with general neurotic tendencies.

M. HAMBLIN SMITH.

The Self-expression of Identical Twins in Handwriting and Drawing. (*Character and Personality, vol. i, Dec.*, 1932.) *Seeman, E., and Saudek, R.*

The authors discuss the diagnosis of the types of twins, and show how a study of the similarities and dissimilarities of twins offers a valuable method of differentiating between influence of inheritance and that of environment. It is pointed out that there are four methods of determining psychic qualities: Psychiatrical diagnosis, intelligence tests, the Rorschach test, and analysis of handwriting and drawing. The latter method is fully dealt with in the cases of three pairs of identical twins. It is noted that in handwriting there are certain conspicuous features which are used by non-scientific people to identify and contrast specimens of handwriting. The authors demonstrate a scientific method of analysing calligraphy, illustrating it by a comparison of the word "Battle" written by Nelson with his right and left hand respectively. Owing to the use of non-scientific methods, previous investigators have stressed the dissimilarity of the handwritings of identical twins. Many new features are demonstrated in the analysis of calligraphy. An excellent description is given of three pairs of identical twins under the headings of environmental history, physical characteristics, educational records and personality traits. The first pair of twins are normal mentally and physically. The second pair are normal mentally but physically abnormal, being conjoined twins. The handwritings of this pair are unique in that they show a combination of features, that has not been seen previously by the authors, who have examined many thousands of handwritings during the last twenty-five years. The special combination of features is extreme lability with remarkable evenness of pressure. The third pair of twins were normal physically, but each had a mental breakdown. From a study of their handwriting, the exact type of their mental breakdown was deducible.

It is concluded from the analyses of these cases that even identical twins show differences in personality.

F. H. HEALEY.

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2. Psychology and Psycho-Pathology.

Estimation of Time. (*Psychol. Bulletin, vol. xxx, March,* 1933.) *Weber, A. O.*

Adequate understanding of the nature of time is fundamental to the understanding of every problem of conscious experience. The subject of time occupies an increasingly important place in philosophical speculation. In Bergson's conception we have a basis for regarding the psychological flow of time as a normal and valid adaptation to fit the existing conditions. The relativistic conception of time as a fourth dimension can hardly be made the basis of a concept of experiential time. A third general view assumes a definite division between objective and subjective time. Sturt assumes that time is a concept which grows out of individual and racial experience; in her view time is subjective, and she maintains that our organization of the past and future originates in utilitarian motives. Taking this view, a profitable line of attack would be through an investigation of the development of the time-sense in children and primitive people. Sturt has also cited evidence to disprove the commonly accepted idea that unpleasantness of mental content increases the apparent duration of time. Experiments of estimation under varying degrees of kinæsthetic strain would add materially to our understanding of the time-sense. M. HAMBLIN SMITH.

The Rôle of Speed in Intelligence. (*Psychol. Bulletin, vol. xxx, Feb.,* 1933.) *Beck, L. F.*

Thorndike has advanced the suggestion that human abilities should be measured in three respects: (1) Height or level of difficulty; (2) extent or range of different tasks; and (3) speed. The relative importance of these three factors is somewhat problematical, owing to the divergent results which have been obtained. The work which has been done is summarized. It seems probable that some scores which are supposed to represent only speed are vitiated by other factors which tend to raise the correlation. M. HAMBLIN SMITH.

The Constancy of the I.Q. (*Psychol. Bulletin, vol. xxx, Feb.,* 1933.) *Nemzek, C. L.*

The results from studies on this subject present a high degree of consistency. There is a rather wide range in the magnitude of the reliability coefficients for the Stanford-Binet and for various group tests. It is important to consider the groups studied by the various investigators. The extremely low coefficients reported for the Stanford-Binet tests were not found in unselected groups. The reliability coefficients for group tests tend to be as high as for individual tests, thus casting doubt upon the view of the gross unreliability of group-testing.
M. HAMBLIN SMITH.

Effect of Caffeine upon Chess-Problem Solving. (*Journ. Comp. Psychol., vol. xv, April,* 1933.) *Holch, H. G. O.*

Under controlled conditions, one series of 255 two-move problems in 17 tests of 15 problems each was done after the subcutaneous injection of 0·4 ml. of saline solution, and another similar series after the injection of 200 mrgm. of caffeine. The subject did not know which injection was being given. After caffeine there was a 7% improvement in the number of problems solved per hour. It would be unsafe to conclude from this that caffeine improves the capacity to solve such problems. As to the use of such problems as a mental test, we have evidence that the number of pieces is a factor in the solving time, and that the maximum difficulty occurs with a range of from 17 to 21 pieces. The "solving piece" in the "key move" has also to be considered. When the queen had to be used the efficiency was better and the mistakes fewer; the bishop came second, in spite of most errors being made with this piece. M. HAMBLIN SMITH.

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A Contribution to the Study of Intelligence by Dounayevsky's Test, and its Relation to Social and Cultural Environment [*Contribución al estudio de la inteligencia por la prueba de Dounaïevsky y su relación con el ambiente social y la cultura*]. (*Arch. de Neurobiología, vol. xii, Sept.–Oct.*, 1932.) *Figuerido, C. A.*

Briefly described, this test deals with the ability to determine the mode of formation of a series of geometrical figures. The first three figures in each series are exhibited to the subject, and he has to make a continuation of the series. The test was given to 494 subjects, drawn from various professional schools. The results are tabulated. The test eliminates verbal difficulties. M. HAMBLIN SMITH.

Age and Human Ability. (*Psychol. Rev., vol. xl, March*, 1933.) *Miles, W. R.*

The author found that in perceptive ability there was a rise in the adolescent period, a slight but continuous fall to the age of 60, and a rapid fall after that age. When motor ability was investigated there was found a persistence in old age of skill in rotary motility and in reach and grasp. There is a tendency towards superiority of performance in older people in tasks where diligence is more important than quickness. The ability to remember, especially immediate memory, shows a relatively rapid decline. The attempt to learn new material which conflicts with older memory habits shows that the older subjects are tremendously inhibited. Spontaneous imagination appears to have the quality of true agelessness. Comparison and judgment show little impairment. In old age the more purely psychological processes step in to save the shortcomings of the physiological processes.
G. W. T. H. FLEMING.

Psychology of Feelings and Emotions. II: Theory of Emotions. (*Psychol. Rev., vol. xl, March*, 1933.) *Harlow, H. F., and Stagner, R.*

The theory advanced is that unconditioned affective responses form a basis for the emotions, and that emotions themselves are conditioned responses subsequently formed. The unconditioned components of affective experience are the four fundamental feeling-tones of pleasantness, unpleasantness, excitement and depression. These are associated with projection centres in the thalamus, and have reflex connections with various subcortical motor centres. Emotions are not innate, but develop as a result of experience. An emotional response includes the fundamental feeling tone aroused by the sensory stimuli. The occurrence of a motor response is not essential to an emotional experience, and in pathological cases the conscious and reflex components of the pattern may become dissociated.
G. W. T. H. FLEMING.

Verification of Emotional Regression by Tests. (*Amer. Journ. Psychiat., vol. xii, March*, 1933.) *Sherman, M., and Crider, B.*

An account of the case of a young woman who suffered from attacks in which she regressed to different emotional levels. Opportunity was taken to obtain her performances on standardized tests during the attacks. The results are described, and are so consistent as to rule out the possibility of malingering.
M. HAMBLIN SMITH.

Relation of Maternal Over-protection to School Grades and Intelligence. (*Amer. Journ. Orthopsychiat., vol. iii, Jan.*, 1933.) *Levy, D. M.*

The " pure " group of over-protected children must be carefully distinguished from the group in which the over-protection is a compensatory reaction to hostility, and from the group in which there has been non-maternal or mixed over-protection. In the " pure " group we have a high percentage of acceleration in reading and of retardation in arithmetic. This is explained by the fact that the over-protected child has a great advantage in verbalization. M. HAMBLIN SMITH.

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Sociability of Abnormal Children and Social Child Psychology. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *Schneersohn, F.*

The paper deals with sociability as a mental test of child groups. There are three forms of child collectives—family, local and school. The children's general conduct was studied, and a special watch was kept upon their play. Asociability was found in mentally retarded and in nervous children. Childhood is the source and reservoir of free creativity for the entire lifetime. The play content proves to be an organic expression of the child's emotion and fantasy. Emotion and fantasy are organically connected and must be considered together. Normal play is always elastic, and never has the mechanical monotony of organized games.

M. HAMBLIN SMITH.

Investigations with Rorschach's Psycho-Diagnostic Test among Normal Spanish Children [Investigaciones con el psicodiagnóstico de Rorschach en niños normales españoles]. (*Arch. de Neurobiología, vol. xii, Sept.–Oct.,* 1932.) *Maza, A. L.*

Rorschach's test consists of ten standardized pictures obtained by folding sheets of paper on which ink blots have been made. The cards are presented in order to the subject, who is asked what he thinks they resemble. The responses are classified under certain types. The subjects of the present investigation consisted of 100 children (50 of either sex) between the ages of 10 and 13 years. The number of responses obtained was less than that reported for Swiss, German and French children, but the reaction-time was quicker. Types of response classified as " abstract " were conspicuous by their absence. There were more responses of the " pedantic " type among the girls, as compared with the boys, and the girls also showed a greater tendency to stereotyped responses. As regards differences shown by the various age-groups, as a rule the variety of response and the median reaction-time increased with the age of the subjects, thus giving evidence of development of the intellectual functions. The number of " original " responses showed an irregular rise from ten to thirteen years of age. There is evidence of a greater age-development in boys as compared with girls. M. HAMBLIN SMITH.

Classification of the Responses to Rorschach's Psycho-Diagnostic Test [La clasificación de las respuestas en el psicodiagnóstico de Rorschach]. (*Arch. de Neurobiología, vol. xiii, Jan.–Feb.,* 1933.) *Salas, J.*

This paper is based upon the results in 210 cases, including some cases of manic-depressive psychosis in which the test was applied during a lucid interval. The main types of response are classified as " mass " or general (G), " detailed " (D), " shape " (F), and " movement " (B). There are a number of combinations of these types, and also of what may be called sub-types. We also have " original " (O) responses. The paper is illustrated by examples of these several types of response. M. HAMBLIN SMITH.

A New Interpretation of the Rorschach Test. (*Psychol. Rev., vol. xl, March,* 1933.) *Shirey, H.*

The writer points out that the Rorschach test indicates the degree of integration of the perceptual processes, not the kind of training as assumed by Rorschach. The test is in the final analysis a means of determining the degree of differentiation of the perceptual processes. G. W. T. H. FLEMING.

Instinct and Intelligence in Insects. (*Character and Personality, vol. i, Dec.,* 1932.) *Hingston, Major R. W. G.*

Interesting examples are given of the working of instinct in ants and wasps. The following features of instinct are noted: its perfection, inflexibility and wisdom. Yet instinct is a blind impulsive force, and contrasts unfavourably with intelligent behaviour. The author concludes that instinct and intelligence are found together in varying proportions throughout the whole animal kingdom.

F. H. HEALEY.

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Writing Slips and Personality. (*Character and Personality, vol. i, Dec.*, 1932.) *Roback, A. A.*

In this investigation subjects were set to write to dictation; the speed of the dictation was increased until the subjects failed to keep pace. At great speeds all the stimuli cannot be reacted to, and lapses occur, which are here studied. These lapses and deviations are found to be due to two complementary processes in the nervous system—perseveration and assimilation. Psychopathic patients were studied, and the conclusion formed that in writing mental patients tend less to mechanization than do normal subjects. The paranoid patient shows the greatest divergence between his usual handwriting and that at high speed with the eyes shut. Hypo-dynamic people in rapid writing are apt to omit letters, hyper-dynamic people in rapid writing show repetitionary marks.

The rôle of the unconscious in writing lapses is discussed. The author, having made a study of such lapses and typographical errors in Freudian literature, agrees that the lapses are largely of unconscious origin. He differs from Morton Prince, who thought they were determined by a conscious idea. He concludes by stating that there is no need for assessing experimentally-induced slips differently from those made in ordinary life. F. H. HEALEY.

An Unemployed Village. (*Character and Personality, vol. i, Dec.*, 1932.) *Lazarsfeld, P.*

An attempt is made to study the psychological aspect of unemployment by collecting facts of life in a village of 1,500 inhabitants, formerly dependent on a textile factory which has now been closed down three years, so that only 80 people are left at work. Information was obtained from communal officials, from the co-operative shops and library, and from a study of the people in classes arranged for gymnasium and sewing. It was found that parallel with the narrowing of economic scope the psychic life contracted, the people became apathetic and hopeless and did not know how to use their leisure time. A decline in physical health was also noted.

F. H. HEALEY.

The Experimental Method Treated as an Instrument of Psychological Investigation (*Character and Personality, vol. i, March*, 1933.) *Kretschmer, Ernst.*

The author opens a discussion on the rôle and limitations of experiment in psychological research. He shows that in his own special work the experimental method proves reliable. He is a believer in the value of the descriptive method, which is particularly useful in psychology, both subjectively and objectively.

F. H. HEALEY.

The Experiment: Is it the Only, and is it a Reliable Way to Establish Psychological Facts? (*Character and Personality, vol. i, March*, 1933.) *Driesch, Hans.*

The author begins by defining psychology as the theory of conscious experience. He shows that there are three main approaches to the study of psychology, namely the introspective, the phenomenological and the behaviouristic. He asserts that experiment is not the only way to establish psychological facts, but it is a reliable method. Introspection must always be the basis of the psychological application of experiment. F. H. HEALEY.

Experimental Psychology and Psychological Experiment. (*Character and Personality, vol. i, March*, 1933.) *McDougall, William.*

In this article the author describes the failure of psychology to assist political economy. After fifty years of experimental psychology, social scientists ignore psychology. Wundt was regarded as the founder of experimental psychology, and yet at the end of his career he wrote a social psychology which bears little relation to experimental methods. Wundt defined psychology as the direct study of immediate experience, and so ruled out all experiment except introspective reporting under laboratory conditions. The shortcomings of Wundt's psychology were due

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to his mistaken definition. According to McDougall psychology is the science of human nature. During the last fifty years there has been progress in the knowledge of man, but in this progress experimental psychology has been only a minor factor. The main factors have been the general advance of evolutionary biology, and the clinical study of nervous and mental disorders. McDougall gives two reasons for the relative sterility of experimental psychology—the complexity of psychological science and the tendency to seek mechanistic explanations. Attention is drawn to the youth of writers on experimental psychology. Workers in psychology enter the field too early and leave too soon, and so there is a dearth of mature minds. McDougall suggests that all would-be psychologists should first graduate in biology, then in medicine, and then study nervous and mental patients. There would then be some prospect of progress in the knowledge of human nature.

F. H. HEALEY.

Personality Tests—Whither? (*Character and Personality, vol. i, March*, 1933.) *Roback, A. A.*

Since 1905, when Jung devised a series of association tests, there has been steady growth in the attempts to measure personality. The non-cognitive functions of man are tested for four reasons: To throw light on the general nature of personality, to place an individual in relation to others, to collect a body of sociological data, and to ascertain the best methods of training the young.

Reference is made to the Character Education Inquiry carried out at Columbia University. Eleven thousand children were tested and three volumes of results have been published. The study of character and personality has not reached the high level of reliability of physics and chemistry. F. H. HEALEY.

The Affectivity of Kretschmer's Constitution Types as Revealed in Psycho-galvanic Experiments. (*Character and Personality, vol. i, March*, 1933.) *Enke, E.*

Psycho-galvanic experiments were made on one hundred healthy persons of either sex consisting equally of pyknic, athletic and leptosomatic constitution types, aged between 17 and 60. The first test consisted of observing the subject during a period of a quarter of an hour's rest. Affectivity was greater and more lasting with the leptosomes; the pyknics and athletes were less irritable, and attained a state of rest more rapidly. The typical healthy pyknic is a harmonious individual. The schizothyme is easily irritable, and full of internal tension. The second test was an expectation test. The nervous internal excitability was greatest with the leptosomes. The third experiment was based on sense stimuli. With a painful stimulus the pyknics showed the strongest and most lasting reaction. With an unexpected auditory stimulus the leptosomes were particularly sensitive. Distinctions between the constitution types as seen in everyday life are thus experimentally confirmed. Differences in the affectivity of the sexes are only a matter of degree; there is no qualitative difference. F. H. HEALEY.

Character and Personality among American Indians. (*Character and Personality, vol. i, March*, 1933.) *Austin, Mary.*

The author has examined the mental processes of American Indians. In the normal life of these primitives there is a great amount of intuition and dream analysis. Creative power is more marked in primitives than in the civilized. Each member of the tribe finds his particular gift and specializes intensively upon this. Temperament is less obviously seen in primitives. Character—that is the drive and direction of personal traits—is their most outstanding development.

F. H. HEALEY.

Morphology and Character. (*Character and Personality, vol. i, March*, 1933.) *Landau, E.*

The author discusses the correlation between attributes of character and physical qualities. In this connection Lavater studied physiognomy, Gall and Schwalbe

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studied phrenology. Siguad described four somatic types, and Kretschmer completed the association between bodily type and mental type. Landau, by anthropological and radiological research, has differentiated between the coarse and the delicate skeletal types. Reference is made to the study of the cellular architecture of the cerebrum by Brodmann, Economo and Flechsig, and its bearing on localization of cerebral functions. F. H. HEALEY.

Menhirs, Trilithons and Dolmens: Their Symbolism. (*Brit. Journ. Med. Psych., vol. xii, March,* 1933.) *Troisier, Jean.*

An attempt is made to give a psycho-analytical explanation of the various megalithic monuments. Déchelette believes that the worship of these stones is a form of fetishism. Hutton has studied these structures in Assam, where they are still being erected, and finds that they have to do with magic rites of earth fertilization and worship of the dead. Evidence is given that the menhir has a male sexual significance, while the trilithons and dolmens have a female sexual significance. That the dolmens sometimes contain human remains does not contradict this view. In Egyptian and subsequent cultures the menhirs become obelisks, and the dolmens become arches. F. H. HEALEY.

The Case of Arthur Symons: The Psychopathology of a Man of Letters. (*Brit. Journ. Med. Psych., vol. xii, March,* 1933.) *Bragman, Louis J.*

Arthur Symons was a leading exponent of symbolic literature. A psychological study of his personality is a review of the psychology of abnormal literature. His favourite phrase was " escape from reality ", and this he found in the world of symbolic expression and in madness. It is true of the psychoses and of symbolic literature that each deals with the cultivation of private fantasies in the face of contemporary reality.

An account is given of the upbringing of this man of letters, of his psychological development, and of his madness at the age of 41. In his *Confessions: A Study in Pathology*, he relates his personal experiences in asylums, and compares them with those described by Charles Reade in *Hard Cash*. (In the article there is a misquotation, *It's Never Too Late to Mend* being cited instead of *Hard Cash*.)

Symons was not only a leader of the symbolist cult, but he was also an interpreter of the personalities of its members. He was the protagonist of those who "write with their nerves"; of these Poe was an outstanding example. Many of Symons's poems give evidence of his interest and participation in sexual deviations. Symons was a schizoid personality, had a poor hold on reality and needed much morbid stimulation. Thus a psychopathic literature complements a psychopathic personality. F. H. HEALEY.

Religion: Racial Character and Mental and Social Health. (*Brit. Journ. Med. Psych., vol. xii, March,* 1933.) *Suttie, Ian D.*

The religious history of Europe is studied to give information about " repression ". For this purpose the conversion of Northern Europe to Christianity forms a good field for research. The pre-Christian culture of Northern Europe, Teutonic religion and mythology are discussed. Emphasis is placed on the prestige of women. Disagreement is shown with the contention of Freud that in all cultures the father appears to the son as the chief obstacle to incest wishes. The Teutonic mother had independence and personality, and thus her own objection was the principal barrier to incest wishes. There was no over-valuation of masculinity and no antipathy between the sexes. The Œdipus and Electra complexes did not exist, but brother-sister incest fantasies are common in Teutonic myths.

The transition from Paganism to Christianity is shown to involve the subversion of maternal repression and its replacement by a paternal religious idealism.

It is pointed out how Christianity appeared in Palestine as a new social psychology, and that the Roman persecution was not based on religious intolerance,

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but upon national motives. Thus, the churches led by St. Peter were exiled in A.D. 55, as political offenders. The author points out that there are four solutions of the incest problem. The matrifugal father cult and the brother cult are religious solutions. Symbolic gratification or the Serapis mysteries forms a third substitute. Endogenous maternal repression is the best method of dealing with the Œdipus complex. The attitude of the Church towards sex is discussed. The establishment of a patriarchal society with loss of women's prestige is noted. Of the many social reactions that followed, the institution of chivalry and the rise of Protestantism are observed.

The witch phobia appears to the author to be a more natural product of the transition from Pagan-Teuton to Catholic-Feudal culture than Jones thinks. It seems that the tendency to oscillate between the extremes of matriarchy and patriarchy is the most important factor in the evolution of cultures. A freer interchange of views between the various branches of psychology would promote a better understanding of these medical, religious, social and ethnological problems. The author is convinced of the possibility of an Œdipus-free culture, with resultant improvement in mental hygiene. Eight appendices follow in which Teutonic religion and mythology are discussed and many quotations given.

F. H. HEALEY.

The Lunatick, the Lover and the Poet. (*Birmingham. Med. Rev., vol. viii, March,* 1933.) *Yellowlees, H.*

It is stated that these three classes of people gain contact with life, mainly by imagination. The lunatic, seeing something that is not there, is said to experience hallucinations. He is thus divorced from reality, and does not know it. The lover misinterprets reality, and is thus a psychoneurotic. Emotions tend to interfere with judgment, and the strongest emotions are those concerned with sex. It is pointed out that three hundred years before Freud, Shakespeare realized the importance of the sexual factor in neuroses. The poet indulges in fantasy, and demonstrates the reality he finds there. Imagination in harmony with reality is insight, and that is the poet's great possession. The one quality of mind that will help the plain man along the path of life is the capacity for wonder. The man who can wonder becomes like a little child, and enters triumphantly into the kingdom of humour and of beauty.

F. H. HEALEY.

The Science of Error. (*Brit. Journ. of Med. Psychol., vol. xiii, June,* 1933.) *Howe, E. Graham.*

The first part of this paper is an attempt to simplify psychological understanding, and points out that education of public opinion in psychology is essential for progress in the prevention of mental disorder. In the second part of the paper, "error" is defined and classified. Human nature has a great capacity for "error". Freud has made clear the fundamental importance of motive as the source of subjective judgment. In the third part of the paper is given a classification of the sources of "error" in subjective judgment. The last part of the paper gives the application of the author's work to psychotherapy. The author's purpose is to find a shortened analytic therapy suitable for use in the hospital ward or the out-patient clinic. F. H. HEALEY.

Repression and Rationalization. (*Brit. Journ. of Med. Psychol., vol. xiii, June,* 1933.) *Lundholm, Helge.*

Repression is discussed and its nature and working demonstrated. Six cardinal points of repression are postulated. The material of investigation has been restricted to the repression of impulses associated with the feeling of guilt, this latter being thoroughly analysed and shown to arise from two kinds of deeds—non-intentional and intentional. The intentional deeds are committed in response

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either to sudden emotional impulses, or to enduring sentimental urges. Five variables are given and described, each modifying the intensity of the feeling of guilt. Methods of ridding oneself of the guilt feeling are by sublimation, distraction and manipulation of the evidence. This latter activity is rationalization, and it is stated that rationalization is a common useful mode of activity, expressive of repression. F. H. HEALEY.

Pleasure and Pain and the Emotions. (*Brit. Journ. of Med. Psychol., vol. xiii, June,* 1933.) *Kruger, M. S.*

Opinion is divided as to the part played by pleasure and pain in the determination of behaviour. McDougall's hormic theory and Freud's pleasure-principle are discussed. The terms "sensation", "appetite" and "emotion" are defined. It is stated that pleasure and pain are emotions. The origin of the emotions is traced from the amœba stage. The emotions are classified in four groups, and some disagreement is expressed with the James-Lange theory of the emotions. This paper will cause confusion in the minds of those accustomed to the strict description of emotions as given in McDougall's *Outline of Psychology.*

F. H. HEALEY.

A Psycho-analytic Study of the Voices of Joan of Arc. (*Brit. Journ. of Med. Psychol., vol. xiii, June,* 1933.) *Money-Kyrle, Roger.*

History provides the psycho-analytical enthusiast with much material for study. An analysis of Joan of Arc is made from a study of her answers to the judges at her trial, supplemented by traditional representations of her character. Some account is given of the upbringing of Joan of Arc, the development of her visions and voices is described, and their relation to the Œdipus situation is discussed. F. H. HEALEY.

Inter-relations between Psycho-analysis and the Experimental Work of Pavlov. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *French, T. M.*

The psycho-analytic method is, of course, analytic; the studies of Pavlov's school are synthetic. But although the method of approach is different, the results are very closely allied. The calling up of one reaction by another is essentially the same phenomenon as Pavlov's conditioned reflex. There is also a relation between repression and Pavlov's inhibition. It may be asked whether the conditioned responses of Pavlov are as simple as they seem, and whether they do not also contain elements which correspond to the unconscious insight of our neurotic patients' super-egos. The establishment of the normal object choice at the time of puberty is equivalent to Pavlov's differentiation. Adjustment to external reality is based essentially upon Pavlov's conditioning and differentiation processes. The loss of the reality-testing function in the unconscious is due to conditions which destroy differentiation. The activating influence of the wish upon motor activities directed toward its realization is a direct effect by induction of the inhibition of its reality value. A trauma is an experience calling forth a conflict of such intensity that there is no energy left free to be turned to neutral differential stimuli; as a result of this, the traumatic experience has been withdrawn from the learning process. This throws light upon the importance of "recapitulation with insight" as the essential therapeutic moment in psychoanalysis. M. HAMBLIN SMITH.

The Significance of Emotional Attitudes in the Psycho-analytic Situation. (*Amer. Journ. Orthopsychiat., vol. iii, Jan.,* 1933.) *Alexander, F.*

The objective unemotional attitude appears to be contradictory to the different rôles which the patient attributes to the analyst. In many cases the emotional participation of the patient is either above or below the desirable optimum. Ferenczi has recently suggested what he calls the "relaxation principle", the

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gist of which is that the analyst should ease the situation by adjusting his own attitude to that of the patient. It is often of great advantage to relieve the solemn atmosphere which many patients connect with the analytical process. In working with criminals relaxation has special importance, and is usually the only way in which their confidence can be gained; this is because of the extreme sense of guilt which is found in neurotic criminals. On the whole, however, the less we discard the classical, objective technique the better for the progress of the analysis. M. HAMBLIN SMITH.

Death and Dying. (*Psycho-analytic Review, vol. xx, April,* 1933.) *Bromberg, W., and Schilder, P.*

With a view toward finding out as precisely as possible the thoughts and emotional reactions on the subject of death and dying, an extensive *questionnaire* was submitted to seventy normal individuals and to ten patients suffering from mental disorder. The major section of the paper consists of a critical examination of the information so obtained. The following is a summary of conclusions arrived at, partly from the *questionnaire* and partly from psycho-analytic studies of cases in whom death ideas were prominent.

In the conscious and unconscious psychological experience, death has several meanings: (1) An escape from an unbearable situation. (2) A method to force others to give more affection than they are otherwise willing to grant. (3) To be killed may be an equivalent for sexual union. (4) Death may mean the final narcissistic perfection which grants lasting and unchallenged importance to the individual. (5) Death gratifies the masochistic tendencies and is the ideal of self-punishment, since it perpetuates the suffering inflicted. (The eternity of hell-fire reflects this psychological attitude.) (6) All libidinous instincts find in this way an intensive expression in the idea of death. STANLEY M. COLEMAN.

The Psychology of Nudism. (*Psycho-analytic Review, vol. xx, April,* 1933.) *Lorand, S.*

The dynamic powers in the nudist movement can be traced to exhibitionistic and scoptophilic (*voyeur*) impulses. Those individuals who derive their sexual gratification chiefly through these instincts, invariably show, in analysis, a very strong castration anxiety, which inhibits them in their direct genital contact with a partner. The genital libido is changed into a non-genital, and the sexual tension achieves outlet in the regressive manner which was the regular channel of gratification in childhood. It will be satisfied by being seen and seeing, and thus a complete libidinal frustration will be prevented. In this respect the practice of nudism has a neurotic colouring.

The component of guilt will also be present, because, the practice not being accepted by society, adherence to the cult means a defiance of society and of the individual's super-ego. The paper concludes with a number of illustrative cases.
STANLEY M. COLEMAN.

The Clinical Psychogenic Aspects of Pruritus Vulvæ. (*Psycho-analytic Review, vol. xx, April,* 1933.) *Bien, E.*

Two cases of "essential" neuro- or psychogenic pruritus vulvæ are described. Both occurred in married women at the change of life. They both had been frigid in sexual intercourse, and in each case the pruritus was associated with an involutional melancholia. There was strong evidence to support the belief that the vulvar irritation and consequent scratching were a masturbatory equivalent.
STANLEY M. COLEMAN.

The Psycho-analysis of Pharmacothymia. I: The Clinical Picture. (*Psycho-analytic Quarterly, vol. ii, Jan.,* 1933.) *Radó, Sándor.*

Clinical psychiatry regards the "drug addictions" as somatic intoxications, and classifies them as "mental disorders of exogenous origin". Interest, therefore,

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is centred upon the determination in detail of the cerebral effects of the noxious substances. Psycho-analysis, on the contrary, begins with the recognition of the fact that it is not the toxic agent, but the impulse to use it, that makes an addict of a given individual.

In his outline of the clinical picture, the writer stresses the presence of an " initial depression " preceding the taking of the drug, and sensitizing the individual for the pharmacogenic pleasure effect. In the period of elation following, the ego regains its original infantile narcissistic stature, with heightened self-regard, elevated mood and loss of respect for reality. A cyclic course is then evolved. There is a return of the depression with renewed craving for the drug. Gradually tolerance is developed ; the desired elation becomes increasingly more undependable and finally threatens to disappear altogether. When the condition has progressed so far that an elation can no longer be provided to combat the misery of the depression, the individual is confronted with the phenomena of the pharmacothymic crisis. There are three possible reactions to this crisis : flight into a free interval (voluntary submission to withdrawal therapy), suicide and psychosis.

Meanwhile, crucial alterations have occurred in the sexual life. After a transient augmentation of sexual libido, there is diminished potency with a turning away from sexual activity. The pharmacogenic pleasure effect gradually comes to be the dominant sexual aim, *i.e.*, there is regression to an artificial sexual organization which is auto-erotic and modelled on infantile masturbation. In opium-pharmacothymia, especially, this auto-eroticism is associated with a rich fantasy life. The ego responds to this devaluation of the natural sexual aim by a fear of castration, with resultant dismembering and masochistic fantasies. It is the pronounced masochism of the male addict that is responsible for his homosexual object choice.

Pharmacothymia is not always bound to this basic course with its terminal crisis. The alcoholic, particularly, can combat the recurrent depression by overlapping doses, so living in a state of " subdued continuous elation ". This modified course leads through a progressive reduction of the ego to the terminal state of pharmacogenic stupor. STANLEY M. COLEMAN.

Psychologic Considerations in Alcoholic Hallucinosis. (*Int. Journ. of Psycho-Analysis, vol. xiv, Part* 2, 1933.) *Bromberg, W., and Schilder, P.*

In ten cases of alcoholic hallucinosis and in one case of a psychosis due to drugs, castration and dismembering motives were in the foreground of the clinical picture. These motives were closely connected with homosexual and anal trends, which appeared overtly or as thinly disguised symbolism in the manifest content of the psychosis. The voices in the hallucinosis were found to represent the super-ego, and to be based specifically on homosexual identification. Several of the cases had made a suicidal attempt, which was regarded as the expression of a tendency to self-castration and self-dismembering. The majority of the alcoholics investigated showed evidence of sexual maladjustment prior to the psychosis, though in no case was there a history of actual homosexuality.

STANLEY M. COLEMAN.

A Psychological and Pedagogical Consideration of the Fairy-tale [Eine psychologisch-padagogische Betrachtung des Kindermärchens]. (*Internat. Zeits. f. Indiv. Psychol., Jan.–Feb.*, 1933.) *Vinski-Hollonger, M.*

The writer discusses whether children so much want fairy-tales as have fairy-tales thrust upon them, and is of opinion that children would disregard a considerable mass of fairy-tale lore if given free and intelligent access to other literature, real life stories, the wonder of science, etc. JANE SUTTIE.

The Aptitude for Mathematics (Zur Frage der mathematischen Begabung]. (*Internat. Zeits. f. Indiv. Psychol., Jan.–Feb.*, 1933.) *Vogt, W.*

The author asks how far a child may have an unconscious understanding—an intuitive perception—of abstract mathematical ideas such as the simpler

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Euclidean formulas, and if it is wise to subject every child to the same mathematical discipline? He considers that there are two main attitudes—one that emphasizes the meaning content and one that emphasizes the formal element; both are probably necessary in the complete mathematician, but most individuals tend more to the one or the other. A sound educational system would permit each child to work out its particular aptitude on its own lines, and thus preserve its appetite for learning beyond anything our present school methods can achieve.

JANE SUTTIE.

Mathematical Talent [*Über mathematische Begabung*]. (*Internat. Zeits. f. Indiv. Psychol., Jan.–Feb.*, 1933.) *Bekd, E.*

A discussion of the preceding article and of the respective values of a strictly formal, or of a more practical, introduction to mathematics. It is pointed out that neither an early aptitude for analytic, nor one for geometrical thought need indicate any particular aptitude for mathematics, though the much rarer combination of the two may do so. The extreme value of a study of the psychology of mathematical talent is emphasized, because of the comparative freedom of such an interest from emotional factors.

JANE SUTTIE.

Individual Psychology and the Aptitude for Mathematics [*Was kann die Individualpsychologie zur mathematischen "Begabung" sagen?*]. (*Internat. Zeits. f. Indiv. Psychol., Jan.–Feb.*, 1933.) *Adler, A.*

Comments upon the two preceding articles. Much depends on the child's preparation for school, much on the teacher. If the latter believes only in an innate aptitude, he will soon give up trying to elicit an interest that may not be immediately forthcoming. Girls, for instance, are supposed incapable of mathematics, and so usually meekly accept this dictum. Most bad mathematicians have been spoilt children.

JANE SUTTIE.

Nervousness [*Nervosität*]. (*Internat. Zeits. f. Indiv. Psychol., Jan.–Feb.*, 1933.) *Nowotny, K.*

When we say a person is "nervous" we mean that in some way his behaviour is wrong, but we can also say that there is no nervousness without a heightened affect. Maladjustment to a difficult external situation, or to an inner situation —an organ inferiority—may alike give rise to nervousness. The inability to meet any given reality situation may evoke any one of a vast range of organic "nervous" symptoms. The author considers that adaptation to reality is rendered difficult in our culture, mainly because of the insane competition for prestige and individual pre-eminence by which it is characterized. The cure of nervousness is brought about by strengthening and increasing the capacity for community feeling.

JANE SUTTIE.

Gandhi's Childhood [*Die Kindheit Gandhis*]. (*Internat. Zeits. f. Indiv. Psychol., Jan.–Feb.*, 1933.) *Friedmann, A.*

A study of Gandhi as the youngest and delicate child of a four-times married father, an energetic, not over-religious man of good social standing. His mother was an intensely religious woman, who resorted to rigorous fasting irrespective of health. The conflict between Gandhi's need for compensatory self-assertion and his sense of inferiority has had a profound influence on his life-pattern. This is apparent in his abnegation of sexual life at 34 as a solution of a situation he could not resolve successfully in a more positive fashion, and in his abnegation of food as a means to an almost magical control, not otherwise obtainable, over his compatriots.

JANE SUTTIE.

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The Romantic Temperament in the Light of Individual Psychology [*Das Wesen des romantischen Menschen im Lichte der Individual-psychologie*]. (*Internat. Zeits. f. Indiv. Psychol., Nov.–Dec.*, 1932.) *Sternberg, A.*

The romantic sets up a special life-programme in order to escape the necessity of adjusting to life itself; he uses wit and irony to confuse the issues and to veil himself from himself. This inner, unacknowledged insecurity is apparent in romantic art, which is always confused and lacking in poise. Romanticism is characterized by extreme over-compensation; its one law is the assertion of individuality—the need to be unique. Flight is the life-line of the romantic—flight from life, from age; the romantic is too old at thirty. Unlike the merely neurotic, however, these temperaments are saved by their life-programme—the attitude of romantic irony which leads them on to that form of over-compensation we call art.

JANE SUTTIE.

On Sexual Perversions [*Zum Thema: Sexuelle Perversionen*]. (*Internat. Zeits. f. Indiv. Psychol., Nov.–Dec.*, 1932.) *Adler, A.*

Adler rejects any idea of heredity in sexual perversions, or of the existence of a third sex, or of congenitally innate factors. He points out that Laqueur's finding of the hormones of the opposite sex in the urine in all cases has been countered by Bran, who found the same hormones in the urine of homosexuals and non-homosexuals. Homosexuality does not depend on hormones.

He suggests a schematic classification of psychologies into equipment-psychologies (*Besitzpsychologien*) and use-psychologies (*Gebrauchspsychologien*). The former are concerned with the equipment the individual brings with him into the world, the latter with the use he makes of it—this is the interest of individual psychology. Homosexuality is the result of the particular "training" undergone or chosen by the individual. "The necessary presupposition for the right use of body and soul is a developed community feeling."

JANE SUTTIE.

The Idea of the Word in Ancient Israelitish Culture [*Die Idee des Wortes in der altisraelitischen Kulturentwicklung*]. (*Internat. Zeits. f. Indiv. Psychol., Nov.–Dec.*, 1932.) *Rosenthal, H.*

The author holds that monotheism was the idea characteristic of the culture period of the Jewish prophets, but that it developed out of a much older idea—the idea of the word. While other peoples perpetuated their dreams of power and beauty in temples, sculptures and painting, the word is the Jewish medium of cultural expression.

The cultural conflict for more than 500 years of Jewish history was that of the deflecting of interest from what was visible to what was audible, the conflict of the senses, of eyes against ears. It is illustrated by the battles of the men of God against the idol-worship of the people and the princes. With the appearance of the prophets the Jews have only one sense, one portal of approach to the soul, the ear. God is the audible being (*Gott ist das hörbare Wesen*); he is not a visual but an auditory experience and hence *the idea of an invisible being*. Israel's great historical achievement is the teaching of the invisible God; this connotes the enriching of culture by the final conquest of the sense of hearing.

JANE SUTTIE.

A Case of Multiple Personality. (*Amer. Journ. Psychiat., vol. xii, Jan.*, 1933.) *Wholey, C. C.*

The case bears many resemblances to Morton Prince's famous "Miss Beauchamp", the main difference being that the present patient was of humble origin and environment, with few educational advantages. The patient presented a history of nervousness in childhood. She was born at seven months, was always restless, and liked to "run away". She began having "fainting spells" at nine years of age. These were certainly hysterical. Early amnesic dissociations were

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exhibited. On account of marital difficulties the dissociations became elaborated into a definite second personality, which took the form of a mischievous character-entity, whom the author has named " Susie ". The husband became exasperated by " Susie's " pranks, and adopted corporal punishment as a curative measure, the only result of which was to augment the dissociation. The patient was able to escape from her duties and moral standards by unconscious assumption of the irresponsible " Susie " character. The extent to which this could be carried was exemplified at the birth of her second child ; by slipping into the " Susie " character she became immune from the pain of childbirth. The case appears to have been " cured " by a great change in the patient's environment. " Susie " was not the only dissociation presented by the patient. In the original reading of this paper, alterations in personality were shown by means of cinematograph pictures, some of which are reproduced. M. HAMBLIN SMITH.

A Psycho-Physiological Interpretation of the " Aura ". (*Brit. Journ. Med. Psych., vol. xii, March*, 1933.) *Kenneth, J. H.*

The author doubts whether the explanation of the " aura " as due to negative after-images by retino-cerebral induction is complete. Smell-colour synæsthesiæ are suggested as a further interpretation. These associations are called by Stoddart " photisms ". There is a relationship between visual and olfactory experience, as albinos are deficient in the discrimination of odours, and like the retina, the olfactory mucous membrane is normally pigmented. Visual experience due to wider affective stimuli, and subliminal olfactory or electrical stimuli emanating from human beings, cannot be excluded from a rational explanation of the " aura ". F. H. HEALEY.

A Psychological Case Study of the Amyostatic-Akinetic Form of Encephalitis Lethargica. (*Brit. Journ. Med. Psych., vol. xii, March*, 1933.) *Edwards, K. H. R.*

A full description is given of the family history and psychological make-up of a male patient, æt. 36. A mental illness of the schizophrenic type is described in this patient, and attributed to the effects of an attack of encephalitis lethargica in 1931. It is admitted that the patient was destined for a psychosis, but it is claimed that the encephalitis lethargica was the precipitating factor. There is a discussion on the effect of encephalitis lethargica on the personality. Many references are made to von Economo's *Encephalitis Lethargica* (1931). The author disputes the statement made in this book that in encephalitis lethargica the thymo-psyche alone is affected, and that encephalitis lethargica has given anatomical proof of the separate existence of the two psychological mechanisms, thymo-psyche and noö-psyche. Pavlov's work is used in the explanation of the incidence and continuance of the somnolent and stuporose states in this disease.

F. H. HEALEY.

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3. Psychiatry.

The Psychiatric Approach of the Practitioner to his Patients. (*Bull. of the New York Acad. of Med., March*, 1933.) *Raynor Mortimer, W.*

After a historical introduction the author gives a review of the development of mental processes, with a simple description of new psychological conceptions. The importance of a full history or longitudinal survey of the patient is stressed, and the necessity of making a cross-sectional survey of the personality make-up of the patient at the level of the complaint. The relationship between bodily and mental illness is discussed, and it is pointed out how physical disorders impair the psychological defence mechanisms and act as a release to personality disorders. Mental health indicates an adequate level of integration of the whole biological unit. Examples are given of the author's method of approach to his psychiatric cases. F. H. HEALEY.

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Notes on Admissions to State Institutions. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *Adler, H.*

The admission-rate of mental disorder may be dependent upon the capacity of institutions rather than upon incidence in the community. It appears impossible to maintain any institution at the population for which it is designed. Pressure from without results in over-crowding before the internal resistances rise to the point where equilibrium can be established. Taking all kinds of state institutions, we find that delinquency predominates in the adolescent period, criminality in young adult life, and mental disease in middle life. One might expect that the frequency of diagnosis of mental deficiency and the average age of the admissions to institutions for the feeble-minded would fall in the decade preceding adolescence, but such is not the case. The decision as to whether a person is sent to a school for special training does not rest upon the diagnosis, but upon the social behaviour of the individual. The question then arises whether there is a similar relationship between the other groups here dealt with. M. HAMBLIN SMITH.

The Relation of Spatial Isolation to Psychosis. (*Journ. of Abnorm. and Soc. Psychol., vol. xxvii, Jan.–March,* 1933.) *Brooks, L. W.*

The consensus of opinion of a representative group of alienists was that isolation *per se* was not a primary cause of mental abnormality. Isolation is rather a precipitating or secondary factor, while the organic condition, the experiental factors and habit patterns of the individual are the primary considerations.

G. W. T. H. FLEMING.

Endocrine Investigation in Psychiatry [*La exploración endocrina en psiquiatria*]. (*Archivos de Neurobiología, vol. xii, Sept.–Oct.,* 1932.) *Sempau, J. A.*

A critical review of recent progress in this department of clinical investigation. The author considers that the most hopeful prospect lies in the connection of endocrinology with paranoid states and with manic-depressive psychosis.

M. HAMBLIN SMITH.

Bromide Delirium and other Bromide Psychoses. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *Levin, M.*

Seven cases of bromide delirium and one of bromide hallucinosis are presented. In addition to these two types, and to " simple bromide intoxication ", there seems to be a possibility that a paranoid state may occur. The distinction between paranoid disorientation and delirious disorientation is indicated. There is evidence that bromide intoxication may precipitate a chronic psychosis, which remains long after the intoxication has subsided. Objections are raised to the hypothesis of " withdrawal delirium ". M. HAMBLIN SMITH.

Delayed Mental Disorders following Cranial Traumatism and their Psychopathological Interpretation. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, March,* 1933.) *Gordon, A.*

From a consideration of eleven cases of cranial injury, without gross neurological symptoms, and in which psychotic manifestations developed many months or years after the injury, the author found that traumata of the affective sphere invariably preceded the onset of the psychosis. Special emphasis was laid on the psychological constitution of these patients, by investigating the biological and mental experiences of early life and the influence of the latter.

Understanding of dynamic factors in the Freudian sense was the guiding principle used by the author. G. W. T. H. FLEMING.

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Fluctuation of an Ambiguous Figure in Dementia Præcox and in Manic-depressive Patients. (*Journ. of Abnorm. and Soc. Psychol., vol. xxvii, Jan.–March,* 1933.) *Hunt, J. McV., and Guilford, J. P.*

The rates of fluctuation of an outline cube were investigated in cases of dementia præcox and manic-depressive insanity. The authors found that in dementia præcox the average rate of fluctuation was four times greater than in manic-depressive insanity. The paranoid types of dementia præcox showed a lower average rate than the rest of the præcox patients, a very wide range of rates and a great daily variation. The præcox group was almost identical with a normal group in average rate and in dispersion of fluctuations, showing that the manic-depressives are the cases which deviate from the normal. Some factor or factors in this group inhibit the fluctuations. Some subjects saw no fluctuations at all in spite of coaching.

G. W. T. H. FLEMING.

Late Periodical Psychoses. (*General Practice, April–June,* 1933.) *Porot, A.*

The occurrence of melancholia at the pre-senile and involutional periods is discussed, and the question of classification raised. In agreement with Anglade, the author prefers to separate the involutional group from Kraepelin's manic-depressive group, finding an organic substratum in most of his cases. The late or delayed psychoses are thus divided into two groups—involutional and organic. The latter group is subdivided into four sub-groups—encephalitic, circulatory, traumatic and of unknown origin. Examples of each type are given. Involutional melancholia is stated to occur between 45 to 60, and to be more frequent in women. The basic element is anxiety, and herein the condition is said to differ from the melancholic phase of the circular psychosis.

F. H. HEALEY.

Schizophrenia in Children. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *Potter, H. W.*

A typical schizophrenic reaction may appear long before pubescence. What little delusional formation there may be is exceedingly simple. The outstanding symptoms are found in the field of behaviour and in a consistent lack of emotional *rapport*. None of the cases reported have shown any marked improvement during the period of hospitalization. The schizophrenic child often appears mentally deficient because the libido is invested within the patient himself, thus interfering with the objectification of the intellectual processes.

M. HAMBLIN SMITH.

Encephalographic Studies in Schizophrenia. (*Amer. Journ. Psychiat., vol. xii, Jan.,* 1933.) *Moore, M. T., Nathan, D., Elliott, A. R., and Laubach, C.*

In a series of 60 selected cases, encephalography has proved to be a safe clinical procedure. In the majority of cases cerebro-spinal fluid pressure was high, indicating the presence of a chronic increased intracranial pressure. The study of the films indicated a tendency to selective atrophy involving the parietal lobes and the island of Reil; the amount of mental deterioration is reflected in the degree of this atrophy. Evidence of increased size of the ventricles was shown in 25 cases. None of the films showed a normal cerebral pattern.

M. HAMBLIN SMITH.

A Case of Communicated Insanity [*Un caso de locura comunicada*]. (*La Semana Med., vol. xl, May 25,* 1933.) *Soler, J.*

The patients in this case are sisters, æt. respectively 38 and 36 years. Owing to the death of their mother the eldest sister became responsible for the management of the household, and the younger sister was accustomed to obey the elder in all matters and to adopt her attitude towards her environment. The younger sister is of a lower grade of intelligence than the elder, and appears to be definitely feeble-minded. The elder sister developed delusions of persecution on the part of the neighbours, and communicated these delusions to the younger sister. They

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applied for police protection, armed themselves with a revolver and took other protective measures. As a result, they have been admitted to a mental hospital. The elder sister appears to be incurable. Separation from the influence of the elder sister has produced some improvement in the younger, but it is likely that her mental deficiency will prevent further improvement.

M. HAMBLIN SMITH.

The Church and Individual Security. (*Amer. Journ. Orthopsychiat., vol. iii, Jan.*, 1933.) *Reynolds, B. C.*

Psychiatry must accept the limitations in the life-situations of its patients. We must be wary of setting up our personal norms. The church has a contribution to make to individual security, but it must co-operate with psychiatric workers. The clergy must give up preconceived notions of how people ought to think and feel and how they ought to be treated, and must be willing to learn how they actually think and feel and what it is that they desire. The church alone claims to stand for a world of ideals beyond the purposes for which people associate themselves in other organizations; and its belief in an "on-beyond" counts for much in the mental health of many patients. M. HAMBLIN SMITH.

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4. Neurology.

The Mental Symptoms Associated with 58 Cases of Cerebral Tumour. (*Journ. of Neur. and Psycho-pathol., vol. xiii, April*, 1933.) *Minski, L.*

Mental symptoms in cases of cerebral tumour depend on the rate of growth of the tumour and the previous personality of the patient. In slow-growing tumours personality changes predominate. In the present series, 14 of 58 examined were depressive and 7 maniacal. In rapidly-growing tumours changes in the intellectual sphere were marked, and personality changes slight. Twenty-five cases showed reactions simulating functional psychoses, and in 12 of these physical signs were absent. G. W. T. H. FLEMING.

Ætiology of Polyneuritis. (*Arch. of Neur. and Psychiat., vol. xxix, April*, 1933.) *Wechsler, I. S.*

Many cases of polyneuritis are not toxic in origin, but should be grouped with the avitaminoses. Many cases previously regarded as solely due to lead, alcohol, arsenic, etc., may have avitaminosis as as additional factor in causation. Apart from the anti-neuritic vitamins B_1 and B_2, there is some experimental evidence that the absence of vitamin A and possibly also of C and D can lead to degenerative changes in the spinal cord, the roots and nerves, and that their presence will prevent degeneration caused by poisons which sometimes affect the nervous system.

G. W. T. H. FLEMING.

Abolition of Bulbocapnine Catatonia by Cocaine. (*Arch. of Neur. and Psychiat., vol. xxix, March*, 1933.) *Buchman, E. F., and Richter, C. P.*

The authors investigated the action of cocaine on monkeys which had received doses of bulbocapnine and were in a "catatonic condition". They found that the cocaine abolished the catatonic state at once, while cocaine injected before bulbocapnine prevented its development. The hanging response which appears in macaque monkeys when under the influence of bulbocapnine is abolished by cocaine. As this response is abolished in monkeys by lesions of area 6 of Brodmann, it is possible that this part of the brain may be thrown out of action by bulbocapnine, and cocaine may act on the same area. It has to be remembered, however, that both these drugs act on subcortical centres as well. G. W. T. H. FLEMING.

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The Abnormal Excretion of Theelin and Prolan in Patients Suffering from Migraine : Preliminary Report. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, May,* 1933.) *Riley, H. A., Brickner, R. M., and Kurzrok, R.*

Thirteen patients suffering from migraine were studied over a period which included a typical attack. The amount of theelin when present rarely exceeded 5 rat units per litre. Only exceptionally did the quantity of hormone reach 10–20 rat-units, which is considered the normal amount for women within the menstrual age. No relation was found between variations in the excretion of theelin and the occurrence of headache. In all the cases prolan was excreted. In two women past the menopause and one approaching it, prolan was present almost daily in large quantities. In 20 out of 29 instances the headache was preceded or accompanied by the appearance of prolan in the urine. There was a continuous relation between the appearance of prolan and the occurrence of headache. The two prolans A and B are both from the anterior pituitary.

G. W. T. H. FLEMING.

Ménière's Disease. (*Arch. of Neur. and Psychiat., vol. xxix, March,* 1933.) *Coleman, C. C., and Lyerly, J. G.*

The authors confine the term Ménière's disease to those cases which give a history of violent attacks of vertigo, accompanied by nausea and vomiting, tinnitus in one ear and partial deafness in the same ear. Treatment consists in intracranial section of the eighth nerve. The risk from the operation is now very small and recovery prompt. Of the cases operated on by the authors, none showed vertigo following the operation ; tinnitus improved in every case if it was not actually abolished.

G. W. T. H. FLEMING.

Narcolepsy. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Wortis, S. B., and Kennedy, F.*

Narcolepsy may be regarded as a symptom-complex denoting a neuro-physiological derangement, probably of an organic nature, in the region of the floor of the third ventricle and peri-aqueductal regions. One or more of three cardinal symptoms occur—sleep or trance-like states, attacks of cataplexy, and catalepsy. In a small group of cases ephedrine has been found useful.

M. HAMBLIN SMITH.

Convulsive Disorders of Two Opposite Periods of Life : Puberty and Climacterium. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Gordon, A.*

Is the chronological relationship between the genital life and convulsive seizures a mere coincidence or is it fundamentally physiological ? We must discard the idea of mere incidental coincidence. A break in the mechanism which regulates chemical equilibrium occurs at critical times in genital life ; this break is produced primarily by the hormone of the anterior lobe of the hypophysis, and secondarily by the influence of the latter on other endocrine glands. At the same time, the psychological factor has to be taken into account. The problem is only solvable by an analysis of all functions, somatic and psychological, in the individual case.

M. HAMBLIN SMITH.

Hereditary Factors in Epilepsy. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Stein, C.*

This paper presents the results of a tabulation of 1,000 institutionalized epileptics and 1,115 non-epileptic controls. The results do not justify the conclusion that the symptom-complex known as epilepsy is an inherited condition. The higher incidence of neuro-psychiatric disorders in the families of epileptics may be explained on the basis of an existing potential or latent germ-plasm defect. It is likely that this defect or vulnerability furnishes more than usually fertile ground for the production of epilepsy by such factors as trauma, infection, birth-injury and alcoholism.

M. HAMBLIN SMITH.

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Cancer Complicating and Modifying the Course of Epilepsy. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Hodskins, M. B., and Guthrie, R. H.*

Dehydration has been favoured as a valuable aid in controlling convulsions. Cancer favours alkalosis of body-tissues. In a review of 55 cases of malignancy complicating epilepsy, it is shown that the number of seizures decreased as the malignancy progressed. Alkalosis obviously does not induce seizures in epileptic patients. It is probable that the cachexia and dehydration raise the convulsion threshold. M. HAMBLIN SMITH.

Human and Experimental Epilepsy [*Epilepsia experimental e humana*]. (*Revista da Assoç. Paulista de Med., vol. ii, March,* 1933.) *Martino, G.*

This paper is based upon researches at the medical school of Asunción, Paraguay, especially those of Prof. José Amantea, whose work has been done on the effects of strychnine locally applied to the sensori-motor centres of dogs. Three factors have been found necessary for the experimental production of epileptiform convulsions—an increase of central excitability by means of strychnine, a stimulation of the cutaneous zone corresponding to the centre treated with strychnine, and a constitutional predisposing factor. This last factor is of special importance. The question arises whether it is possible to produce an artificial predisposition in animals (and this has a bearing upon the subject of human idiopathic epilepsy). The author considers that this question cannot, as yet, be answered. It is the investigation of the predisposing factor that is of most importance for the solution of the problem of human idiopathic epilepsy.

M. HAMBLIN SMITH.

Experimental Convulsive Seizures. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, March,* 1933.) *Wortis, S. B.*

The author considers that during a convulsive seizure there is a discharge of stimuli which flow out through all available neural mechanisms, both cerebro-spinal and vegetative. Vaso-constriction of cerebral vessels is certainly not the only mechanism capable of causing convulsive seizures.

G. W. T. H. FLEMING.

Experimental Convulsions Following Lesions of the Tuber Cinereum. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Wortis, S. B., and Klenke, D.*

The view has recently been taken that aberrations in function of the nuclei in the region of the tuber cinereum are the causative pathology in epilepsy. A review, however, of the literature seems to show that generalized convulsions can be produced by various disturbances in different parts of the central nervous system. It appears highly improbable that there is one specific " convulsogenic centre " responsible for all convulsive phenomena. M. HAMBLIN SMITH.

Influence of Variations in Fluid Intake on Intracranial Pressure in " Epileptics ". (*Arch. of Neur. and Psychiat., vol. xxix, March,* 1933.) *Fremont-Smith, F., and Merritt, H. H.*

The authors found in a group of epileptics that wide variations in the level of fluid intake had no appreciable effect on the pressure of the cerebro-spinal fluid. There was no effect on the incidence of convulsive seizures.

G. W. T. H. FLEMING.

Relation of Jugular Foramina to Epileptic Seizures and Hydrocephalus. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, April,* 1933.) *Davis, D. B.*

The author X-rayed the jugular foramina and measured their area. Of 40 patients with epileptic convulsions, 72·5% had foramina which were larger on the right. Ten cases with various diagnoses provided 9 with the right foramen the larger. Seven cases with hydrocephalus were X-rayed, and in 6 observations the foramina were too minute to permit accurate measurement. G. W. T. H. FLEMING.

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Acquired Hydrocephalus. (*Amer. Journ. Psychiat., vol. xii, Jan.*, 1933.) *Pierce, L. B.*

A report of two cases occurring in adults. The greater number of such cases are caused by obstruction to the normal circulation of the cerebro-spinal fluid, resulting in its accumulation in the ventricles. Both the present cases were of this type. The first case was due to a primary ependymitis, with occlusion of the aqueduct of Sylvius. The second case was of the so-called communicating type; the hydrocephalus was produced by interference with absorption of the fluid as a result of adhesions which obliterated the cisternæ. These adhesions must have been occasioned by a form of meningitis or arachnoiditis.

M. HAMBLIN SMITH.

Cerebral Birth Conditions with Special Reference to the Factor of Hæmorrhage. (*Amer. Journ. Psychiat., vol. xii, Jan.*, 1933.) *Patten, C. A., and Alpers, B. J*

Many cerebral birth conditions are primarily due to failure of development of the brain, particularly in the realm of myelinization. Evidence of this was found in a study of 30 infant brains, both term and premature. Punctate and large hæmorrhages were found in the subependymal region, involving the matrix area, causing destruction of spongioblasts which would be eventually concerned in the deposit of myelin. The factor of subarachnoid hæmorrhage as a cause of these cerebral conditions is discounted as compared with the more vital hæmorrhage in the subependymal region. The cause of these hæmorrhages is not clear.

M. HAMBLIN SMITH.

A Form of Progressive Cerebral Sclerosis in Infants Associated with Primary Degeneration of the Interfascicular Glia. (*Journ. of Neur. and Psycho-pathol., vol. xiii, April*, 1933.) *Greenfield, J. G.*

Two cases of cerebral sclerosis in young children are described. The demyelination affected the white matter of the cerebral hemisphere diffusely, but the optic radiations and the pyramidal tracts were relatively spared. The interfascicular oligodendrocytes were absent in the case with the longer history, and much degenerated in that with the shorter history. There was a great accumulation of mucinoid and abnormal lipoid granules. The author suggests that the primary cause of the condition is an inability to form the proper lipoid material for the formation of myelin.

G. W. T. H. FLEMING.

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5. Criminology.

Psychiatry and its Relationship to the Administration of the Criminal Law. (*Amer. Journ. Psychiat., vol. xii, Jan.*, 1933.) *Nelson, W.*

This article is based upon eight years' experience at St. Louis. There is an increasing tendency to seek the advice of a psychiatrist. Being called directly by the court removes the suspicion of possible bias in the examiner. In this way there have been examined 410 cases. Of these, only 7 were found to be of normal mentality (it must be remembered that the cases were selected). Psychopathic personality was found in 136, and feeble-mindedness in 95. The recommendations of the examiner were adopted by the court in about 75% of the cases. The official statements of the offences charged give very little information as to their real nature. Sex offences of various kinds represented 16% of the cases examined. The law is more static than are the persons who administer it. There should be no difficulty in dealing effectively with offenders against the social code, while yet disposing of them in accordance with the scientific facts. Freedom of the examiner from the suspicion of bias greatly increases the value which is assigned to his opinion. Medical students should receive more instruction in these matters.

M. HAMBLIN SMITH.

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An Essay by a Juvenile Delinquent [Aufsatz eines kriminellen Jugendlichen]. (*Internat. Zeits. f. Indiv. Psychol., Nov.–Dec.*, 1932.) *Schneider, J.*

A brief note on an essay entitled, "If I had Magical Power", by a 14½-year-old delinquent. Attention is drawn to the inherent inferiority feeling owing to circumstances of birth, upbringing, etc., that is compensated for in the extravagantly aggressive wish-formations and the need to be of importance.

JANE SUTTIE.

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6. Treatment.

Shall we Apply Industrial Psychology to Psychiatry? (*Occupat. Ther. and Rehabil., vol. xii, Feb.*, 1933.) *Marsh, L. Cody.*

Psychiatry has given sound advice to the industrial world. It is suggested that psychiatry could now benefit by some advice from the industrialists. At the Worcester State Hospital, the Occupational Therapy Department was given charge of all the patients, and so a Department of Patient Industry was set up. An industrial survey of the patient population and a detailed analysis of all the hospital jobs, showed that a mental hospital can offer all the essentials of any industry.

It is suggested that the American Medical Association should make a sociological investigation of the 600 mental institutions, and provide appropriate measures of reform. Psychiatry needs most a sense of humour. The view must be abandoned that what is called mental disease is a medical problem only; it is really a mixed social, educational and industrial problem. Twenty-one accusations are made against psychiatry in its present form. In a humorous way psychiatry is taken a as patient and dealt with at a staff meeting. The treatment suggested is industrial psychotherapy. F. H. HEALEY.

Directed Industrial Therapy as an Aid to the General Practitioner and the Specialist. (*Occupat. Ther. and Rehabil., vol. xi, Dec.*, 1932.) *Kirby, Collier G.*

A good definition of occupational therapy by Hall is given. Four cases of psychoneurosis are described in which a return to working efficiency was produced by the use of suggestion and persuasion. A case is described in which vocational guidance solved the mental trouble of another patient. A plea is made for the early use of occupational therapy coincident with the early diagnosis of mental disease. F. H. HEALEY.

The Use of Dramatics and Stage Craft in the Occupational Treatment of Mentally Ill Patients. (*Occupat. Ther. and Rehabil., vol. xii, April*, 1933.) *Noble, T. Douglas.*

Over 100 years ago Dr. Rush wrote about the therapeutic value of music and entertainments. At the author's hospital in Maryland consideration has been given to the part played by dramatics and stage craft. A dramatic club has been formed by the patients. Drama affords a safe and ready avenue for the release of overcharged emotions. Examples are given where the participation of a patient in drama aided the psychotherapy. Besides this, dramatic activities provide relief from the monotony of hospital surroundings. F. H. HEALEY.

The Time Element in Therapy. (*Amer. Journ. Orthopsychiat., vol. iii, Jan.*, 1933.) *Taft, J.*

Driven into a "blind alley" by the limitless possibilities of long time case-work, certain groups have taken refuge in what is known as the "short contact". This contains the whole problem of therapeutic case-work and its solution. It indicates a self-confidence which has so far freed itself of fear as to take responsibility for its own part in a process; it points to an achievement which can afford to

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admit a limitation; it recognizes the fact that whatever takes place in therapy must be present, in some degree, in the single contact. The distinction between therapeutic case-work and analysis is quantitative, not qualitative. Time is a purely arbitrary category of man's invention, but it represents more vividly than any other category the necessity of accepting limitation as well as the inability to do so, and so symbolizes the whole problem of living.

M. HAMBLIN SMITH.

Ten Years' Experience in the Treatment of Epilepsy with Ketogenic Diet. (*Arch. of Neur. and Psychiat., vol. xxix, April,* 1933.) *Helmholz, H. F., and Keith, H. M.*

During ten years' experience at the Mayo Clinic with 369 epileptic children up to the age of 14 years, the authors, after eliminating a number of cases which were unsatisfactory from various points of view, found a residual group of 160. Of these, 36% were well, *i.e.*, had had no fits for at least a year, 21% were improved, and 43% were not improved. It is pointed out that aceto-acetic acid and its sodium salt are able to prevent experimental convulsions in rabbits, and that their action is greater than the other acetone bodies and is more marked than that of extreme dehydration. G. W. T. H. FLEMING.

The Effects of the Same Drug, or other Experimental Procedure, upon Convulsions Elicited in Animals by Different Experimental Methods. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Pike, F. H., Notkin, D. J., Coombs, H. C., and Weingrow, S. M.*

The same drug or experimental procedure may act very differently on convulsions elicited by different experimental methods. None of the procedures tried are at all effective in protecting the animal from the results of cerebral anæmia. There is little doubt that bromides and trional are effective in protecting the animal from the results of electrical excitation of the cortex. When we have a sufficient analysis of the effects of various agents upon experimentally induced convulsions, and a sufficient study of the effects of various measures upon the clinical course of epilepsy, we may get a clearer idea of the actual cause of epilepsy in the human subject. M. HAMBLIN SMITH.

Changes in the Clinical Signs and Laboratory Findings in Various Types of Psychoses under the Influence of Subcutaneous Administration of Oxygen. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *Notkin, J., Greef, J. G. W., Pike, F. H., and Killian, J. A.*

Four groups of patients were selected for oxygen therapy; 30 female patients with involutional melancholia, 8 cases of mixed manic-depression and 2 cases of inadequacy depression, 10 cases of long-standing catatonia, and 7 patients with convulsive states. Initial findings for all groups showed a normal hæmoglobin content; oxygen produced no significant change. No striking variations were observed in the erythrocyte counts. The lymphocytes were normal throughout. Some of the cases improved under treatment, but it is not clear that this was due to the oxygen. M. HAMBLIN SMITH.

The Effect of the Administration of Sodium Amytal and Sodium Rhodanate on Mental Patients. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Harris, M. M., and Katz, S. E.*

Sodium amytal, intravenously, produces marked but transient ameliorative effects in some psychotic patients; the oral administration of the drug is not so effective. Sodium rhodanate was without any noticeable therapeutic effect in the cases studied, and in several cases its oral administration was followed by toxic manifestations. M. HAMBLIN SMITH.

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Malarial Therapy in Non-Syphilitic Psychoses [*Malarioterapia en las psicosis no luéticas*]. (*Archivos de Neurobiología, vol. xii, Sept.–Oct.*, 1932.) *Bianchini, M. L., and Nardi, J.*

Malarial treatment in non-syphilitic psychoses promises positive results. Easy of application and free from drawback, it should be employed as the routine method of treatment in early cases of schizophrenia, in manic-depressive psychosis (preferably in the excited phase), and in all syndromes of cortical psychomotor irritation. In schizophrenia, cures have occurred in 8% of cases and improvements in 16% ; the figures for manic-depressive psychosis are 23% and 20% respectively. The mortality, as reported from all parts of the world, works out at 0·77% of all cases, and some of these deaths occurred from causes independent of the malaria. The clinical symptoms produced are similar to those observed in the treatment of general paralysis, and the mechanism of action is probably identical. Transmission of blood from malarialized general paralytics to non-syphilitic patients, or *vice versâ*, is quite unobjectionable. The method has proved of no avail in post-encephalitic parkinsonianism and in epileptic psychoses. M. HAMBLIN SMITH.

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7. Pathology and Biochemistry.

Pathology of Central Nervous System in Diseases of the Liver. (*Arch. Neur. and Psychiat., vol. xxix, May*, 1933.) *Crandall, L. A., and Weil, A.*

The authors experimented on dogs, producing hepatic damage by ligation of the common bile-ducts and pancreatic ducts, and on rats, producing hepatic damage by ligation of the common bile-duct. They find that following these procedures substances appear in the serum on the fourth day approximately, which act destructively on the spinal cord of rats in test-tube experiments. These toxins are not identical with the lipases, which are increased simultaneously ; they are excreted through the choroid plexus or through the walls of the cerebral vessels. The toxic effect is most marked at the place of elimination and highest concentration. Here there is a spongy necrosis of the walls of the ventricles, or foci of œdema and demyelinization in the cortex are produced. Proliferation of glia occurs simultaneously with the formation of dense felts of fibrous glia.

G. W. T. H. FLEMING.

Are the Histological Lesions of Dementia Paralytica Specific? (*Amer. Journ. Psychiat., vol. xii, Jan.*, 1933.) *Wertham, F.*

Much stress used to be laid upon the changes in the nervous parenchyma. Increasing knowledge has shown that the diagnostic import of these changes becomes increasingly doubtful. Three types of lesion have been regarded as cardinal signs : (1) Infiltration of small blood-vessels with plasma-cells ; (2) Proliferation of Hortega-cells ; (3) Deposits of iron-pigment in adventitial cells in the intra-adventitial spaces of blood-vessels, and in Hortega-cells. The author has found a spontaneous disease of the brain in chickens ; and in this the histological picture has the closest resemblance to that of dementia paralytica. He concludes that the histological changes in dementia paralytica are a general reaction of the brain, not caused only by the *Spirochæta pallida* (for examinations of the chicken's brain for that organism were entirely negative). The question expressed in the title must therefore be answered in the negative.

M. HAMBLIN SMITH.

Effect of Ephedrine on Blood-sugar Mobilization in Chronic Encephalitis. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, April*, 1933.) *Finkelman, I.*

Ephedrine hydrochloride was used as a sympatheticicomimetic drug to observe its effect on blood-sugar mobilization in chronic encephalitis. Seven out of 14

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blood-sugar curves obtained in chronic encephalitis showed a reversal of the ephedrine action. The author considers that these results confirm the evidence in favour of the existence of a parasympathetic predominance in this disease. It also speaks against the presence of local liver changes in the disease.

G. W. T. H. FLEMING.

Blood Cholesterol Studies in Mental Disease. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *Schube, P. G.*

A study of the blood cholesterol in schizophrenia is presented. There is a tendency to a lowered blood cholesterol in schizophrenia as a group. There are cases of schizophrenia in which the blood cholesterol is normal or increased, but the majority of cases show values below the lower limit of normal, or in the lower limits of the normal range. M. HAMBLIN SMITH.

Bromide Metabolism in Manic-Depressive Psychosis [*El metabolismo del bromo en la psicosis maníaco-depresiva endógena*]. (*Archivos de Neurobiología, vol. xiii, Jan.–Feb.,* 1933.) *Sacristán, J. M., and Peraita, M.*

Applying Roman's method of investigation, the authors conclude that in manic-depressive psychosis the bromide level in the blood appears to fall in a regular and constant manner. Normal values are reached when the clinical picture indicates an improvement. M. HAMBLIN SMITH.

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8. Oligophrenia (Mental Deficiency).

Birth Lesion as a Category of Mental Deficiency. (*Amer. Journ. Orthopsychiat., vol. iii, Jan.,* 1933.) *Doll, E. A.*

The best general term for these conditions is " intracranial birth lesion " rather than " birth injury ". The lesions present at birth are not invariably caused by birth. The most conspicuous features are spasticity and athetosis. Mental retardation is not an indispensable symptom; birth lesions are often associated with high intelligence. Prematurity and first birth strongly predispose toward birth lesions. All extremes of behaviour in the newly-born child are to be regarded with suspicion. The lesions are not progressive after the first few days of life. Heredity is relatively unimportant. The mental examination of the birth-injured subject presents special problems. The handicaps of verbal and motor expression, which are the distinguishing marks in these subjects, greatly increase the difficulties of examination. M. HAMBLIN SMITH.

Size in Mental Deficiency. (*Journ. of Neur. and Psychopathol., vol. xiii, April,* 1933.) *Ashby, W. R., and Stewart, R. M.*

Two hundred and sixty-nine male defectives were examined by the authors. They found that head size diminished with decreasing intelligence. This falling-off affected equally head length, head breadth, head height and ear-to-ear measurements. Brain volume, when made comparable, altered in the same way. The falling-off was most marked among the idiots. Body weight, arm length and foot length all vary with alterations of mental age. (See paper on "The Measurement of the Corpus Callosum", p. 553.)

G. W. T. H. FLEMING.

Nature of Feeble-mindedness. (*Amer. Journ. Psychiat., vol. xii, May,* 1933.) *Myerson, A.*

The most practical working field is the influence of environment upon germplasm, and upon the mind and personality of the human being. Uterine conditions should be a sphere for research. A careful study is needed of nutrition before pregnancy, and of the effects of infectious diseases upon ovulation. It is possible

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that a defective individual in a normal family may represent, not a hidden Mendelian character, but the effect of some passing infection upon germ-plasm. We must not confine ourselves to the study of material conditions which surround groups of the population ; emotional states cannot be neglected. Heredity is the name given to a set of internal forces which operates in a fairly stable way, but is constantly influenced by an immense number of other forces. To explain the defective individual by the internal forces alone is to neglect the rest of life in all its varied aspects. M. HAMBLIN SMITH.

Mental Deterioration and Deficiency. (*Amer. Journ. Psychiat., vol. xii, March,* 1933.) *Fay, T.*

The subject is considered from the standpoint of certain vascular volume relationships. Dehydration and spinal drainage have been found useful in some cases. Various groups of acute and subacute cerebral conditions associated with mental deterioration are presented. The results of dehydration may indicate a possible line of approach in the more chronic cases. There is a field for preventive measures on the lines of correcting disturbed fluid metabolism.

M. HAMBLIN SMITH.

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Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Quarterly Meeting.

The Quarterly Meeting of the Association took place at 11, Chandos Street, Cavendish Square, London, on Wednesday, May 17th, 1933, the President, Dr. R. B. Campbell, occupying the chair.

The minutes of the last meeting, having been published, were taken as read and approved.

Obituary.

The President said that he had to intimate, with great regret, the deaths of Dr. Edward N. Brush, an Honorary Member, and of Dr. Percy Hughes.

Sir Hubert Bond said that Dr. Percy Hughes was almost his closest friend. They were not exactly contemporary at Edinburgh, he, Dr. Bond, being two years senior. It was through the speaker's brother's close friendship with Dr. Hughes that they became so well acquainted. Dr. Hughes' desire to join the medical staff at Bexley at its opening reflected the enthusiasm which dominated those years of his life, and many succeeding years too. He knew that at Bexley there were likely to be all sorts of new ideas, and that kind of thing suited him. He became a very able member of the staff there. One heard a good deal to-day about the occupation of patients, about "occupational therapy"; without attaching to it particularly the meaning usually carried by the phrase, Dr. Hughes threw himself most heartily, at Bexley, into the occupation of the patients, and much of the credit—and perhaps a little fame—which in those days attached to Bexley Mental Hospital was due to him. His ideas brought all sorts of new occupations into being. Then he was translated to Barnsley Hall in Worcestershire, and did his best to develop that Hospital along progressive lines. Until the end it was his earnest wish to maintain progress. To the very end, too, he was beloved by his patients and by his staff. As a member of the Board of Control Departmental Committee on Dietary, he showed great enthusiasm on behalf of the patients, and himself proved of great use to that Committee. His death was quite unexpected, and he, Dr. Bond, felt sure it was a very real loss to the specialty and the Association.

Dr. Hamblin Smith, speaking of the late Dr. E. N. Brush, recalled that the latter had been an Honorary Member of our Association since 1902. Dr. Brush had made a great name for himself at the Department of the Insane of the University of Pennsylvania, and when the new hospital was opened at Baltimore he was appointed its first Superintendent. He worked up that hospital to be one of the leading hospitals in America. Possibly he was best known to members on account of his literary activities, for he joined the editorial board of the *American Journal of Insanity*—now the *American Journal of Psychiatry*—and for more than thirty years he was editor-in-chief; he only resigned his active connection with it two or three years ago. He remained in active work until the end of a long life; he had practically completed his eightieth year, and could be truly said to have died in harness, having been seeing patients until the last week of his life.

In him the Association had lost a valued Honorary Member and American psychiatry one of its prominent exponents; and American psychiatric literature had lost one who has probably done more for it than any living man.

Members present showed their sympathy by rising in their places.

The President requested the General Secretary to send a letter to the relatives of Dr. Hughes and Dr. Brush, expressing the Association's sympathy and condolence.

Council Business.

The President said that at the meeting that morning the Council had discussed a number of matters. The date of the Annual Meeting has been fixed for July 4th to 7th, to be held

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at Colchester and Clacton-on-Sea. The President-Elect had made good progress with the arrangements, a preliminary notification of which had been issued.

Dr. W. J. Kimber was appointed the Association's representative on the Child Guidance Council.

The Council regretted that Dr. Charpentier had found it impossible to accept the Council's invitation to be present as the Association's guest at the Annual Meeting.

The Council considered a letter which had been received from the British Medical Association asking for a statement of the reasons which led the Association to express the opinion it did regarding the British Medical Association's Report. The Council gave full consideration to this matter, and it was finally decided to instruct the Secretary to reply to the British Medical Association stating that this Association's views had already been given at the meetings of the B.M.A. Committee which drafted the Report, and at the B.M.A. Annual Representative Meeting; and that if the British Medical Association wished to discuss the matter further, they might nominate a small number of representatives to meet and discuss the question with representatives of this Association. This was unanimously agreed to.

The Council agreed that a recommendation should be made to all Divisions to endeavour to have elections for membership considered at Divisional Meetings, instead of having them dealt with at the Quarterly Meetings of the Association. This would save a great deal of time at the General Meetings. This was agreed to.

The question of providing badges for Divisional Chairmen was also considered. Members would remember that this proposal was brought forward by the late Dr. Lord, and sanctioned by the Association in July, 1929. The Council now recommended that the Treasurer should be instructed to procure a suitable design—somewhat similar to the handsome ornament which decorated the neck of the President of the Association, but smaller, and with a distinctive ribbon, the colour suggested being crimson. This was agreed to.

Election of Candidates for Membership.

The President nominated Dr. McRae and Dr. Walk as scrutineers for the ballot. At first the ballot was taken *en bloc*, but as one black ball appeared, each candidate was voted for separately, with the result that the following were elected :

Stephenson, George Vaughan, M.B., B.Ch., D.P.M., Assistant Medical Officer, The Priory, Roehampton, S.W. 15.
Proposed by Drs. J. Chambers, E. Mapother and B. W. Brown.

Bunbury, Doris Elizabeth, M.B., B.S.Lond., Temporary Assistant Medical Officer Maudsley Hospital, London ; 25, St. James's Square, Bath.
Proposed by Drs. T. Tennent, L. Minski and J. T. Harris.

Drummond, Peter, M.B., Ch.B., Medical Superintendent, Mid-Wales Counties Mental Hospital, Talgarth, Breconshire.
Proposed by Drs. Ian Skottowe, M. R. Mackay and G. W. T. H. Fleming.

Lewis, Aubrey Julian, M.D.Adelaide, M.R.C.P.Lond., First Assistant Medical Officer, Maudsley Hospital, S.E. 5.
Proposed by Drs. E. Mapother, T. Tennent and L. Minski.

Turner, Cyril Edward Hedgman, M.R.C.S.Eng., L.R.C.P.Lond., Assistant Medical Officer, Leavesden Mental Hospital, Watford, Herts.
Proposed by Drs. R. M. Stewart, W. R. Ashby and R. B. Marsh.

Curran, Desmond, M.B.Camb., M.R.C.P.Lond., D.P.M., Assistant Medical Officer, Maudsley Hospital, London, S.E. 5.
Proposed by Drs. T. Tennent, L. Minski and E. Mapother.

Benjacar, Edgar, M.D.Malta, Assistant Medical Officer, Royal Eastern Counties Institution, Colchester.
Proposed by Drs. F. Douglas Turner, F. C. Osgood and A. G. Duncan.

Penrose, Lionel Sharples, M.A., M.D.Camb., M.R.C.S., L.R.C.P., Research Medical Officer, Royal Eastern Counties' Institution, Colchester.
Proposed by Drs. E. O. Lewis, E. S. Littlejohn and F. Douglas Turner.

The Maudsley Lecture.

Members then adjourned to the Barnes Hall of the Royal Society of Medicine, to hear the 14th Maudsley Lecture, delivered by Dr. Adolf Meyer, Chief of the Phipps Psychiatric Clinic, Johns Hopkins University, Baltimore, U.S.A., on **"British Influences in Psychiatry and Mental Hygiene"** (*vide* p. 435.)

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Sir HUBERT BOND, K.B.E., proposed a vote of thanks to the lecturer. After expressing the thanks of the audience to Dr. Meyer, first for a most memorable lecture, and second for his great kindness in taking the long journey from Baltimore in order to deliver it, he went on to say: We are glad, too, to recognize the fact that Dr. Meyer is no stranger in this country. Although an alumnus of the University of Zurich, which is his *Alma Mater*, and of which he is a Doctor of Medicine, he studied in both London and Edinburgh, and holds an honorary degree from the University of Glasgow. Whatever the length of his stay with us, we hope he will enjoy every moment of it.

Though this lecture, like a president's address, is not usually discussed—it is contrary to custom—I may perhaps be permitted a few remarks in support of my proposal. One of our Maudsley Lecturers, whose removal from our midst we still deplore, reverently, and in no spirit of jest, repeated Pilate's question, "What is Truth?" and he paused to find reply, and then proceeded to deal with the question in a really philosophic and beguiling fashion. To those of us whose work brings us into contact with nervous and mental illness, a question which has often been put is, "What *is* mental hygiene"? It is a profound question, and the more one gives heed to the matter the less easy is it to find a reply that comes near to satisfying one's sense of truth. First, it is not easy to assess either what health is or to determine what ought to be considered as departures from it; and we can add to it the difficulty that the noun is qualified by an adjective whose derivation—whether it be mind, or *the* mind, and quite apart from the Maudsleyan polemics waged half a century ago round the word "the"—involves considerations the most abstruse in all philosophy. Yet we thoroughly believe in mental hygiene as an entity to be attained and maintained, and as a subject for study. Hence our gratitude that someone has come forward and has provided us with a reason concerning the hope that is within us. There are those who, while interested in the subject, do not in reality appreciate its difficulties, and their interest, though genuine and active, is superficial, and mainly concerned with the borderland between what they consider to be normality and clearly recognizable mental illness.

Certainly we have been singularly fortunate in our orator and in his lecture. Prof. Adolf Meyer is acclaimed both as a psychiatrist and a neurologist, and the value of his contributions in both these spheres is everywhere acknowledged. It may not be generally known that the professor was, in his earlier years, Pathologist to the Illinois Eastern Hospital for the Insane at Kankakee, was later Director of Clinical and Laboratory Work at the Worcester Hospital for the Insane in Massachusetts, and, still later, was Director of the Institute of Psychiatric Pathology of the New York State Hospitals. Undeniably the experience of those twenty years must have been a grand foundation from which to develop the insight and skill required for the Directorship of the Henry Phipps Psychiatric Clinic. Could the grip that such basic experience affords be better put than in these four lines:

> "If you would be famous
> And rich in splendid fruits,
> Leave to bloom the flower of things,
> And dig about the roots"?

To my mind, the lesson which this little quatrain contains, and which so often fails to get observance, but of which Prof. Meyer is so brilliant an example, is of the utmost importance to psychological medicine, and to the training of a psychiatrist; and, if I may add, to the exponent of mental hygiene.

Forgive me if, in now formally putting this resolution of thanks to you, which I know will be carried with acclamation, I express my deep regret that in this country our university and other medical schools are, with the exception of the Maudsley Hospital and perhaps Edinburgh, so completely lacking in institutes comparable with that associated with the name of Henry Phipps. Let us hope that this inspiring lecture will do something to remove this reproach.

Prof. D. K. HENDERSON, in seconding the vote, said: I consider it a very great privilege to be asked to second this vote of thanks; I say so because, standing here, I feel very much like a small boy standing in the presence of the headmaster. I started working with Prof. Meyer in 1908, and I had the pleasure of being associated with him during a period of six years—three in New York, three years later on at the Phipps Clinic, Baltimore—and I value this opportunity of expressing publicly the great debt I owe him personally, and the debt I feel that British psychiatry owes him. Because if one man more than any other—I am not comparing him with Kraepelin, Freud and others—in recent years has helped to bring a working conception of mental disorders into actual practical life, that man is Prof. Adolf Meyer. (Applause.) He has himself told you regarding his training, and he has expressed his gratitude to those teachers in this country with whom he worked as a colleague. I would like, on behalf of those British graduates who have had the privilege of working at the Phipps Clinic with Prof. Meyer and the wonderful organization which exists there, to express our thanks

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to him, not merely for the work which we have had the opportunity of doing while there, but for the extraordinary hospitality which has been showered upon us while we have been in America. (Applause.) It is one thing to have the opportunity to work; it is quite another thing having the opportunity to work under the almost exceptional conditions that exist in the United States and especially under Prof. Meyer at the Phipps Clinic at Baltimore.

There is only one further point that I would like to mention. My response to hearing this lecture to-day is that I should like to hear not one, but a series of lectures developing the very wide perspective which Prof. Meyer has attempted, in his writings, to put before us. I do not think one can get that into a lecture, or even into a series of lectures; one has to work with the man to realize his bigness. But, failing that, one would wish that many of the extraordinarily interesting points which he has dwelt on this afternoon could be further elaborated and expanded. I shall merely mention some of the important clinical things. I would mention Prof. Meyer's work on the dynamic psycho-biological conceptions of mental disorders, which were formulated first in connection with the problem of the elucidation of dementia præcox and schizophrenia. And I would mention his work on personality studies, and his whole-hearted interest in social work, on psychiatry in relation to delinquency, and even in such practical matters as the development of occupational therapy, of drug therapy, and all the various isolated and detailed work which goes on, not merely in a psychiatric clinic, but in a mental hospital.

I do feel a debt of heartfelt gratitude to Prof. Meyer for everything he has done for psychiatry, and greatly privileged indeed to second this vote of thanks. (Applause.)

The vote of thanks was carried by acclamation.

Prof. ADOLF MEYER, in reply, said: I prize this opportunity to say an additional word of thanks to Sir Hubert Bond and to my friend and pupil Dr. Henderson, and to say that while perhaps I have lingered a great deal on the memories of the past, there has been with me to-day very strongly a feeling of being together again with a great many of my younger friends. This friendly environment is probably the greatest opportunity and privilege of any worker. I refer to the group who do not come to one merely for opinions, but for discussion, and for the stirring of discussion, for keeping alive a something that is a communion of spirit and work. It is in that spirit I feel this occasion is one of those opportunities of getting together in which the ocean and accidents of time and space can be obliterated when one receives such an overwhelmingly warm welcome as you have given me to-day. And through the request to give the Maudsley Lecture there came to me that something, activating my mind, which wanted to express that unity of striving and that unity of satisfactions that constitutes our life. Thank you very much for your kind attention. (Applause.)

SOUTH-EASTERN DIVISION.

THE SPRING MEETING of the South-Eastern Division of the Royal Medico-Psychological Association was held at Leavesden Mental Hospital, Abbotts Langley, Watford, on May 12, 1933, by courtesy of the Visiting Committee and of Dr. R. M. Stewart.

Members and their guests inspected the hospital and grounds during the forenoon, and were afterwards entertained to lunch.

The following members were present at the meeting: Drs. F. Douglas Turner, G. W. B. James, R. M. Stewart, Daniel F. Rambaut, Thomas Lindsay, Norman Oliver, G. W. Smith, T. P. Rees, Cedric W. Bower, N. H. M. Burke, O. P. Napier Pearn, K. Paddle, A. C. Sinclair, P. M. Turnbull, H. G. L. Haynes, A. Walk, David Rice, E. D. T. Roberts, Noel Sergeant, M. A. Collins and R. M. Macfarlane.

The minutes of the last meeting were taken as read, and confirmed.

It was agreed that the fixing of the date and place of the Autumn Meeting, 1933, and of the Spring Meeting, 1934, be left in the hands of the Divisional Secretary.

The following were elected members of the Divisional Committee of Management: Drs. Bower, E. D. T. Roberts, Robinson, Paddle, Haynes, Sinclair and Macfarlane.

The following Representative Members of Council were elected: Drs. Stewart, Roberts, Collins, Robinson and Rambaut.

Dr. Rambaut was elected Divisional Chairman.

Dr. Noel Sergeant was re-elected Secretary of the Division.

Dr. Sinclair was elected Examiner for the Preliminary Examination of the Royal Medico-Psychological Association, and Dr. Norman Phillips Examiner for the Final Examination.

It was agreed that the Division should entertain the Association to a Reception and Dance during the Annual Meeting at Clacton-on-Sea. The following Sub-Committee was appointed to make the necessary arrangements: Drs. Haynes, Bower, Robinson, Sinclair and Macfarlane.

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Dr. W. Ross Ashby then read a most interesting paper entitled " The Measurement of the Corpus Callosum in the Mental Defective " (see below). This was followed by a cinematograph film entitled " A Clinical Study of Mental Deficiency ".

After the meeting members and their guests were entertained to tea by Dr. and Mrs. Stewart.

Paper.—" The Measurement of the Corpus Callosum in the Mental Defective," by W. Ross Ashby, B.A., M.B., Ch.B., D.P.M., Assistant Medical Officer, Leavesden Mental Hospital. [*Abstract.*]

At this hospital we have been investigating a number of questions regarding the morphology of the brain in mental defectives. This investigation of the corpus callosum is given as an example of our methods.

The area of median cross-section of the corpus callosum was measured in the brains of 69 persons, 60 being unselected defectives of various mental ages and 9 being normal. The most satisfactory method devised consists in projecting the cut surface from an epidiascope, receiving the magnified image on a table and measuring the area with a planimeter.

In examining the results of the measurements, two features were found. Firstly it was found that the corpus callosum was more variable in the lower grades. This increased variability in the lower grades has been noticed by us to be a constant feature in measuring the brain and body of defectives. At present its significance is obscure. Secondly, we have found, by calculating regression coefficients and testing for significance, that the area of the corpus callosum shows some correlation with mental age. This fact is interesting, but before any conclusions can be drawn as to a *causal* connection between the two, there are certain essential points to be considered. The existence of a significant correlation does not prove causation.

In a recent paper (*Journ. Neur. and Psychopath.*, 1933, xiii; see abstract on p. 547 of this Journal) we have found that there is a general tendency for defectives as a whole to be smaller the lower the mental age. This means that *any* measurement on defectives will show correlation with mental age. Consequently before we can draw any conclusions about the connection between mental age and the corpus callosum we must first eliminate the general trend.

When this general trend is eliminated we find that the correlation becomes insignificant, showing that the correlation was merely due to the corpus callosum following the general trend in size.

The general conclusions, then, are that the area of the corpus callosum shows a significant correlation with mental age, but that, on further examination of the data, this correlation is found to depend merely on the general trend in size.

SOUTH-WESTERN DIVISION.

The Spring Meeting of the Division was held by kind invitation of Dr. S. J. Gilfillan at Bailbrook House, near Bath, on Thursday, April 27, 1933.

The following members were present: Drs. J. L. Jackson, John Keay, R. Eager, G. de M. Rudolf, E. Casson, J. M. Rutherford, J. D. Thomas, E. Barton White, W. G. Rivers, J. P. Westrup, P. W. Carruthers, J. W. Leech, A. S. Mules, C. F. Bainbridge, V. L. Connolly, W. R. Dawson, J. McGarvey, E. A. Patterson, J. G. Smith, P. Lornie, G. W. T. H. Fleming, L. Barber, P. G. Grant, R. W. Maxwell, and the Hon. Divisional Secretary, Dr. S. Edgar Martin.

Dr. J. R. P. Phillips, Mr. C. E. Newman, Mr. P. A. Thomas and Miss M. C. Thomas attended as visitors.

Dr. E. Barton White was in the Chair.

Apologies for absence were received from Col. E. W. White, Dr. W. S. J. Shaw, J. S. I. Skottowe and H. A. Scholberg.

The minutes of the last meeting were read and confirmed.

On the proposal of Dr. E. Barton White, seconded by Dr. J. L. Jackson, Dr. S. Edgar Martin was re-elected Hon. Divisional Secretary.

Drs. E. Barton White and J. L. Jackson were elected as representative Members of Council on the proposal of Dr. C. F. Bainbridge, seconded by Dr. J. P. Westrup.

Dr. J. L. Jackson was elected Divisional Chairman on the proposal of Dr. C. F. Bainbridge, seconded by Dr. J. McGarvey.

Dr. J. L. Jackson then took the chair, and said he was sure that he voiced the feelings of members when he said they were all sorry to lose the services of Dr. Barton White as their Chairman. Dr. Barton White had been an ideal Chairman, and it would be difficult for him to follow in his footsteps.

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The following motion was discussed at some length, after Dr. EAGER had amended it to read "in an approved hospital or institution":

> "That steps be taken to draw the attention of all Examining Bodies conferring the D.P.M. to the desirability of candidates passing such examination giving proof of having held a residential appointment in an approved mental hospital for at least two years before such Diploma is conferred".

Drs. FLEMING, CASSON, MCGARVEY, LEECH, WESTRUP, RUDOLF and JACKSON all spoke in favour of the resolution. Dr. EAGER having replied, it was agreed that the resolution should be forwarded to the Educational Committee.

The question of the place of the Autumn, 1933, meeting was left in the hands of the Hon. Divisional Secretary.

A letter was read from the President-Elect, Dr. F. Douglas Turner, regarding the forthcoming Annual Meeting of the Association.

Dr. G. DE M. RUDOLF then read a paper entitled "The Mental Defective Institution in the Prevention of Crime" (see below). Drs. J. L. JACKSON and W. R. DAWSON spoke in favour of more attention being paid to the question of mental deficiency, and pointed out how backward several of the counties in England were with regard to provision for the care of mental defectives.

Dr. J. L. JACKSON proposed and Dr. E. BARTON WHITE seconded a hearty vote of thanks to Dr. Rudolf for his very interesting paper.

During the morning members had the opportunity of inspecting Bailbrook House and its beautiful grounds. They were entertained to luncheon and later tea by the kind invitation of the Board of Directors, who were represented at the luncheon by Mr. E. M. Wright, Deputy Chairman, and Major F. Danford Thomas, in the unavoidable absence of the Chairman, Lieut.-Col. E. W. White, *C.B.E.*, a former President of the Association.

Members expressed keen interest in the history and the many interesting architectural features of this old mansion, which was built towards the end of the eighteenth century. The first occupant was Mr. Denham Skeet, LL.D., for whom the house appears to have been built by one John Eveleigh, a speculative builder, who is said to have designed it originally as a shooting-box for the then Prince of Wales. A later occupant was Lady Isabella King, who founded an institution, under the patronage of Queen Charlotte, "for improving the position of ladies of respectable character and small fortunes". Queen Charlotte herself is known to have visited the house on one occasion while staying in Bath.

On the breaking up of this Society the house was used as a school for a time, but in 1831 it was purchased by Messrs. Terry & Dutton, who converted it into a "mental home", and as such it has been continued to the present day.

Dr. J. L. JACKSON proposed, and Dr. E. BARTON WHITE seconded, a hearty vote of thanks to Dr. S. J. Gilfillan and the Directors of Bailbrook House for their kind hospitality.

PAPER.—"The Mental Defective Institution in the Prevention of Crime," by G. de M. RUDOLF, M.R.C.P., D.P.H., D.P.M., Medical Superintendent, Brentry Colony.

Many mental defectives commit crimes and thereby become criminal defectives. Some of these do so because they are ill-treated, as, for instance, starved. Others do so from vicious motives, as, for instance, incendiarism. The nature of the crime committed varies. In the *Annual Report of the Board of Control for 1931*, the crimes committed by the 306 criminals dealt with in that year under the Mental Deficiency Acts varied from murder, suicide, assault, arson, warehouse breaking and sexual offences, to trifling theft and wandering without visible means of support.

It is clear that in so far as mental defectives can be detained in institutions throughout their lives, whereas the non-defective criminal cannot, except for very grave offences, a mental defective institution must prevent crime merely by giving the defective no further opportunity to break the law. From this point of view, the mental defective institution may prevent more crime per criminal than does the prison. A prisoner, once his sentence has passed, is able to recommence his criminal activities, whereas a mental defective is not permitted to leave the institution until the likelihood of his return to crime has disappeared. The extent to which crime is prevented by the detention of defectives may perhaps be gauged by the number of criminal defectives detained. On January 1, 1932, these numbered 3,242 (Board of Control's Report for 1931).

There is, however, a far more important phase of the mental deficiency institution. Does it train criminal defectives to be able to go out into the world and remain at liberty without committing further crime?

In order to determine this point, the cases of 31 criminal defectives who have been admitted

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to Brentry Colony and who have been discharged or sent out on licence have been reviewed. No selection of cases has been made.

Of the above 31 criminal defectives, one, a post-encephalitic, was sent to a mental hospital. Of the remaining 30, 2 committed further crime. One of these committed larceny after being away from the institution for $2\frac{5}{12}$ years, and the other stole money $2\frac{10}{12}$ years after receiving his discharge. Thus 28 (or 93·3%) of 30 criminals have committed no crime for periods of observation varying from $1\frac{1}{12}$ years to $9\frac{5}{12}$ years after leaving the Colony.

These crime-free periods are not due entirely to the training received in the institution. After the defective leaves the boundary of the Colony he is seen and assisted by visitors of the local authority concerned. There is no doubt that this visiting helps the defective to remain a law-abiding citizen, even though he is visited perhaps only occasionally. On the other hand, the discipline taught and the habits inculcated in the defective at the institution bear, no doubt, a large share in the improvement.

Unemployment would be expected to increase the liability of a defective to commit crime. Despite this handicap of unemployment for periods varying from some months to three years, 12 (or 92·3%) out of 13 defectives committed no crime. The numbers are small, but it is of interest that the percentage of 92·3 for unemployed closely resembles that of 93·3 for the whole series of 30 cases.

Of the two largest groups of crime, namely theft and sexual offences, the mean periods of observation after leaving the colony were $4\frac{7}{12}$ and $4\frac{1}{12}$ years respectively. On the other hand, the mean duration of stay in the colony was $4\frac{7}{12}$ and $2\frac{9}{12}$ years, whilst the mean maximum weekly wages were 47*s.* 4*d.*, and 26*s.* 11*d.* No doubt sexual offences are committed by lower-grade defectives who earn smaller wages upon returning to the outer world. For a similar reason the mean duration of stay in the Colony is longer in the case of defectives committing theft. Many higher-grade patients are less able to control their asocial habits, and so require a longer period before being allowed outside the institution.

Despite the shorter stay of the 11 defectives who had committed sexual offences there were no further crimes committed after leaving the institution, whereas of the 16 cases committing theft, 2 committed further theft after leaving the Colony. The periods of observation in the two groups were approximately the same. There is therefore apparently less risk of defectives who have committed sexual offences committing further crime than there is in the case of those who have committed theft.

Eight defectives committed multiple crimes, one as many as five. These crimes are, of course, only those detected by the police; there may have been many undetected. Amongst these 8 patients, ten crimes could have been avoided if the patients had been certified as mental defectives and placed in institutions after the commission of the first offence, instead of being allowed their freedom with the opportunity of committing further criminal acts.

In 1931, 306 criminal defectives were dealt with in England and Wales. This statement implies that at least 300 crimes could have been avoided if the defectives had been certified before, instead of after the commission of criminal acts. The actual conditions indicate that defectives who commit crime are not always dealt with under the Mental Deficiency Acts; in consequence the total crime caused by mental defectives is greater than suggested by the above figures.

The fact that these potential criminals are allowed to be free to commit crime amongst the general public when powers already exist for their training is surely a slur upon all those authorities who are responsible for the protection of the public from criminal activities.

My thanks are due to the visitors of the 9 County Councils and 7 County Borough Councils who have kindly forwarded reports upon patients who have left the Colony.

The multiplicity of authorities forwarding reports precludes bias due to peculiarities of any one authority. Thus the above findings may be taken as representative for a small series of cases in parts of England and Wales. There is no reason to suspect that results would be greatly different in other parts of the country, particularly as both urban and rural areas are included.

NORTHERN AND MIDLAND DIVISION.

THE SPRING MEETING of the Division was held by the courtesy of Dr. B. H. Shaw at the County Mental Hospital, Stafford, on Thursday, April 27, 1933.

The following members were present: Drs. Archdale, Bain, Blair, Brunton, Dove Cormac, Drury, Erskine, Forrester, Fox, Gilmour, Healey, Henderson, Hopkins, Kirwan, Duncan Macmillan, Macdonald, McGrath, Malloy, Menzies, J. J. O'Reilly, Panton, Parkin, Paul, Pickworth, Potts, Russell, D. J. Selkirk, Selkirk, Sharpe, Starkey, Stephens, Tisdall, and Wilson.

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During the forenoon members visited the new admission hospital and treatment rooms, and the pathology and physiology laboratories.

Dr. Shaw demonstrated the following pathological specimens:

(1) Liver, spleen and heart, from a case of Banti's disease with mental disorder of schizophrenic type.

(2) Brain showing fibrous areas from a case with adenoma sebaceum.

(3) A fourth ventricle showing granulations of the lateral sacs and hæmorrhage which had caused sudden death.

Members were entertained to lunch by Dr. Shaw, and a vote of thanks for hospitality, proposed by Dr. POTTS, was carried by acclamation.

Dr. Shaw took the chair at 2.30 p.m.

The minutes of the previous meeting, having been published and circulated, were confirmed and signed.

The reports of the Divisional Committee and of the Representative Members of Council were received.

The following candidates were, after ballot, duly elected ordinary members of the Association:

JOHN BARRIE PANTON, L.R.C.P.Edin., Senior Assistant Medical Officer, County Mental Hospital, Stafford.

Proposed by Drs. Shaw, Sharpe and Russell.

WILLIAM JOSEPH KIRWAN, M.B., B.Ch., B.A.O.(N.U.I.), Third Assistant Medical Officer, County Mental Hospital, Burntwood, Lichfield, Staffs.

Proposed by Drs. Reid, Taylor and Mackenzie.

DONALD TURNER, M.R.C.S., L.R.C.P.Lond., M.B., Ch.B.Birm., Assistant Medical Officer, Cheadle Royal, Cheadle, Cheshire.

Proposed by Drs. Thomson, Harris-Liston and Russell.

Drs. B. H. Shaw, D. Blair and H. Dove Cormac were elected Representative Members of Council for the ensuing year.

Dr. Shaw was re-elected Divisional Chairman.

Dr. J. I. Russell was re-elected Divisional Secretary.

Dr. Dove Cormac was nominated to serve on the General Nursing Advisory Committee.

It was resolved that the following nominations be submitted to the Educational Committee for the office of Examiner:

Professional Examination: Drs. W. F. Menzies and W. A. Potts.
Preliminary Examination: Dr. Matthew McGrath.
Final Examination: Dr. G. L. Brunton.
Final Mental Deficiency Examination: Dr. H. Freize Stephens.
Nurse Examiner: Miss Moore.

It was proposed by Dr. STARKEY, seconded by Dr. O'REILLY, and resolved, that the Secretary be instructed to make application for authority to elect the Representative Members of Council and the Divisional Secretary by show of hands instead of by ballot, in accordance with By-law 20.

Dr. J. S. SHARPE read a paper entitled "Some Observations on Lipoid Metabolism in Mental Disorder". After discussion, in which several members took part, the meeting closed at 4.45 p.m.

Members were afterwards entertained to tea.

SCOTTISH DIVISION.

A MEETING of the Scottish Division was held at Woodilee Mental Hospital, Lenzie, on Friday, February 17, 1933.

There were present: Drs. Ronald Stewart, R. B. Campbell, R. D. Hotchkis, C. C. Easterbrook, Henry Carre, C. G. A. Chislett, Neil T. Kerr, J. Macleod, Alex. Dick, W. Ford Robertson, D. H. Williamson, T. F. Rodger, W. J. Raitt, W. J. Chapman, T. R. C. Spence, Geo. M. Bell, W. Boyd, C. A. Crichlow, T. Dymock, C. J. Shaw, Angus MacNiven, Douglas McRae, D. J. Forbes, Wm. Blyth, A. G. W. Thomson, W. D. Chambers, J. H. Macdonald, L. C. Bruce, A. M. Wylie, Donald Ross, J. C. Anderson and Wm. M. Buchanan.

Dr. J. H. Macdonald, Divisional Chairman, presided.

Before taking up the ordinary business of the meeting, the Chairman feelingly referred to the death of Dr. James Humphrey Skeen, one of the oldest members of the Division, who first at Kirklands, then at Cupar, and latterly at New Saughton Hall, had devoted nearly forty years to mental hospital administration in Scotland. Short tributes to Dr. Skeen's memory were paid by Dr. Wm. Boyd and Dr. Neil Kerr, and it was unanimously resolved to record in the minutes

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that the Members of the Scottish Division of the Royal Medico-Psychological Association desire to express their deep sense of loss sustained by the death of Dr. J. H. Skeen, and their sympathy with the members of his family in their bereavement, and the Secretary was instructed to send an excerpt of the minute to Mrs. Skeen.

The minutes of last meeting were read, approved and signed by the Chairman.

Apologies for absence were intimated from the President-Elect, Sir Arthur Rose and Drs. J. H. C. Orr, T. C. Mackenzie, A. M. Dryden, W. McAlister, R. Mary Barclay and Prof. D. K. Henderson.

The SECRETARY submitted a letter of acknowledgment from Mrs. Gibson, thanking the members for their kind letter of sympathy.

The SECRETARY reported that at the last quarterly meeting the Council had agreed that the Association should support the Scottish Association for Mental Welfare by annually subscribing to its funds as an affiliated body, and had remitted to the Division the appointment of official representatives to its Executive Council. In terms of this remit it was agreed that the Chairman and Secretary of the Division for the time being should be the Association's representatives on the Executive Council.

Dr. C. J. Shaw was nominated for the position of Divisional Chairman for 1933–34.

Drs. C. J. Shaw and C. G. A. Chislett were nominated for the positions of Representative Members of Council, and Dr. W. M. Buchanan for the position of Divisional Secretary.

The following nominations of examiners were made for submission to the Educational Committee:

1. *Professional Examination:* Prof. D. K. Henderson and Dr. Angus MacNiven.
2. *Nursing Examination (Preliminary):* Dr. C. A. Crichlow.
3. *Nursing Examination (Final):* Dr. J. H. Macdonald.
4. *Nursing Examination (Mental Deficiency):* Dr. D. J. Forbes.
5. *Nurse Examiner:* Miss McGrigor, Larbert.

The following candidate, after ballot, was unanimously admitted an ordinary member of the Association:

JAMES THOMAS CURRAN, M.B., Ch.B.Glasg., Deputy Medical Superintendent, Stoneyetts Certified Institution, Chryston.

Proposed by Drs. C. G. A. Chislett, Henry Carre and Alexander Dick.

Drs. R. B. Campbell, Douglas McRae and Wm. M. Buchanan were appointed as a Committee to watch the interests of the staffs of district mental hospitals in connection with pension rights following the recent cuts in salaries.

Dr. CARRE and his assistants conducted members round representative portions of the hospital.

Members were kindly entertained to lunch in the hospital, after which Dr. Carre, on behalf of the Corporation of Glasgow, welcomed the Division to Woodilee, and the Chairman thanked the Corporation and Dr. Carre and his staff for their kind hospitality and for the arrangements made in connection with the meeting.

On the meeting reassembling Dr. JOHN MACLEOD read a short paper, "Some Observations on Pneumococcal Infection in a Mental Hospital", which was discussed by Drs. Ford Robertson, Donald Ross, L. C. Bruce, Douglas McRae, C. C. Easterbrook, Wm. Boyd, T. F. Rodger, W. D. Chambers, C. J. Shaw and the Chairman.

Dr. ALEXANDER DICK gave a *résumé* of the results of treatment of general paralysis at Woodilee by malarial infection, and demonstrated four interesting cases in illustration. Three of these were advanced cases, now so much improved that they were good hospital workers and able to be on parole. The fourth, who was discharged recovered, had for the past six years been working at his trade of sign-writing and giving every satisfaction to his employer. The pyrexial treatment was combined with injections of tryparsamide. An interesting discussion followed contributed to by the Chairman, Drs. Douglas McRae, Ford Robertson, Ronald Stewart, Aidan Thomson and T. R. C. Spence.

A vote of thanks to the Chairman terminated the business of the meeting, after which members were kindly entertained to tea.

IRISH DIVISION.

THE SPRING QUARTERLY MEETING of the Irish Division of the Royal Medico-Psychological Association was held at St. Patrick's Hospital, Dublin, by kind invitation of Dr. R. R. Leeper, on Thursday, April 6, 1933.

The following members were present: Drs. Dorah E. Allman, S. Blake, R. D. Brennan, P. J. Cassin, Kathleen Dillon, Catherine Carey, W. Eustace, Nora May FitzGerald, John FitzGerald, P. Grace, Dorothy Gardner, L. Gavin, Norman Graham, B. F. Honan, G. J. Harrison, G. H.

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Keene, J. Kearney, B. Lyons, R. R. Leeper, J. C. Martin, C. B. Molony, J. Mills, P. Moran, M. J. Nolan, E. N. M. O'Sullivan, Eveleen O'Brien, J. Scott, R. Taylor, R. H. Taylor, F. O'C. Walsh and R. Thompson (Hon. Secretary).

Apologies for unavoidable absence were received from: The President (Dr. R. B. Campbell) Drs. J. O'C. Donelan, D. L. O'Kelly, D. Rambaut, P. J. Irwin, A. FitzGerald, T. P. Conlon, R. Worth, E. M. Mahony, T. Greene, J. J. FitzGerald, T. I. Considine, F. J. Deane, Douglas McRae, C. H. Wilson, P. J. Courtney, H. R. C. Rutherford and J. F. FitzGerald.

The members were entertained to luncheon, and guests at the luncheon included: Dr. T. P. C. Kirkpatrick, Dr. W. A. Winter, Sir John Lumsden, Dr. F. S. Bourke and Mr. J. G. Perry.

In the absence of the Divisional Chairman (Dr. J. O'C. Donelan), the chair, in the opening stages, was taken by Dr. R. R. Leeper.

The minutes of the previous meeting were read, approved and signed by the Chairman.

The following candidates were, after ballot, declared unanimously elected members of the Association:

DENIS HEGARTY, M.B., B.Ch., B.A.O. (N.U.I.), D.P.M., Assistant Medical Officer, Portrane Mental Hospital, Donabate, co. Dublin.

Proposed by Drs. J. O'C. Donelan, S. Blake and R. Taylor.

JOHN CARR OSBURNE, M.B., B.Ch., B.A.O. (N.U.I.), Medical Superintendent, Lindville Private Mental Hospital, Cork.

Proposed by Drs. B. F. Honan, R. R. Leeper and John FitzGerald.

The meeting then proceeded to the election of the Officers of the Division for the year 1933-1934, and the following, after ballot, were declared elected:

Honorary Secretary: Dr. R. Thompson. Representative Members of Council: Drs. L. Gavin and J. C. Martin.

Dr. LEEPER expressed the obligation the Division was under to their outgoing Chairman (Dr. Donelan), who was no longer eligible for re-election. He had great pleasure in proposing Dr. Gavin as his successor. This was seconded by Dr. MARTIN, and carried unanimously.

Dr. Gavin then took the chair.

The Mental Nursing Advisory Committees to the General Nursing Council were re-elected as follow:

For Northern Ireland: Drs. M. J. Nolan, Dorothy Gardner, F. J. Deane, N. B. Graham and J. Watson.

For Irish Free State: Drs. J. O'Conor Donelan, L. Gavin, S. Blake, R. R. Leeper and J. C. Martin.

Dr. Nolan and Dr. O'Conor Donelan were re-elected Examiners for the Association's Certificate in Psychological Medicine.

The following Examiners were re-nominated for the Nursing Certificates of the Royal Medico-Psychological Association:

Preliminary: Dr. Dorothy Gardner.
Final: Dr. P. Moran.
Mental Deficiency: Dr. G. H. Keene.
Nurse Examiner: Miss Delany.

The SECRETARY then reported that, regarding the resolution adopted at the November meeting for the provision of a Central Pathological Laboratory, replies in favour of this resolution had been received from seven mental hospitals. The Secretary further reported that a Memorandum had been received from the Joint Committee of Grangegorman Mental Hospital, calling attention to the alarming increase in the number of insane persons in public institutions, and the necessity for a better education of medical students in the study of insanity and nervous diseases. Both these subjects were discussed in detail by the members present, and the discussion also included a tabled motion by Dr. MORAN that a sub-committee of the Division be appointed to examine the position as to the teaching of psychological medicine in the Irish medical schools.

Following upon this discussion it was decided that a sub-committee of the Division be set up to inquire into these three important matters, and to make a report to the July meeting of the Division. Dr. Moran was appointed Secretary of this sub-committee, and other members included Dr. J. O'C. Donelan, Dr. John FitzGerald, Dr. Dorothy Gardner, Dr. Norman Graham, Dr. R. R. Leeper and Dr. C. B. Molony. *Ex-officio* members: Dr. L. Gavin and Dr. R. Thompson.

It was decided to hold the Summer Meeting on Thursday, July 13, at Donegal District Mental Hospital, Letterkenny.

Dr. LEEPER opened a discussion on **"The Role of Septic Foci in Mental Disease"**. He said that it had been a great pleasure for him to see that of recent years septic foci had been

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frequently sought, and cases of mental disease frequently ameliorated by their removal. Psychiatry had been far too given to unlimited verbosity as regards mental disease, rather than the search for clinical and curative methods. In a recent number of the Journal, Dr. Goodall had given a very carefully considered review of those conditions of mental disorder associated with chronic sepsis. Again, it had been pleasant to see, in the July number, 1932, a monograph on Sinusitis in Mental Disorders, giving directions as to the treatment of this disease. Of course the foci found most easily were those of the teeth and gums, whereas others were most difficult to trace and costly to treat. He had had two patients suffering from uterine toxæmia hysterectomized a few weeks ago. Both had recovered from the operation, and one lady had lost the sullen and hallucinated state in which she had been for some years, and had made a good mental recovery. The other was much improved mentally. But he would not advise hysterectomy except in such mental cases as show definite symptoms of pelvic disease of a septic nature.

Cotton in America and Hunter and Ford Robertson in Great Britain were the great exponents and advocates of specialized surgical treatment in these cases.

One could not but feel that many of the writers on the subject were possibly unduly optimistic of its value, and one could not neglect the hereditary factor in the causation of insanity.

Dr. MOLONY cited a case where a septic nasal condition seemed to be clearly associated with confusional symptoms, and in which the latter symptoms had temporarily become more marked on the septic conditions being dealt with.

Dr. GRAHAM expressed the view that he was never able to satisfy himself that a septic focus was the sole cause of any mental illness, and he cited several interesting cases, where a combination of conditions—shock, heredity, stress, etc.—had been in operation as well as the septic focus. He was, however, strongly in favour of attempting—where possible—to remove any focus of infection.

Dr. MILLS stated that he had frequently dealt with conditions of nasal sepsis and sinusitis in members of his staff, but had never met with one who showed any tendency to mental symptoms. He had frequently had chronically inflamed appendices removed from mental patients, without any apparent benefit to their mental state.

Dr. HONAN expressed the view that focal sepsis was already losing its prestige in the domain of physical diseases, and that the extraction of tonsils, etc., for rheumatism in children appeared to be of doubtful benefit.

Dr. KEENE cited a case of intractable delusional insanity where an attack of carbuncles had brought about a cure, but, unfortunately, only a temporary one.

Dr. R. H. TAYLOR stressed the importance of following up the removal of septic foci by vaccines, so that more distant and inaccessible foci of infection might be reached.

The CHAIRMAN, in summing up, stressed the importance of a complete clinical examination of every patient, and that every effort should be made to restore the patient to a condition of sound bodily health.

On the motion of Dr. KEENE, seconded by Dr. MARTIN, a vote of thanks was passed to Dr. Leeper for his kind hospitality.

After the meeting the members were entertained to tea by Mrs. Leeper.

PATHOLOGICAL, BACTERIOLOGICAL AND BIOCHEMICAL SUBCOMMITTEE.

REQUEST FOR AUTOPSY MATERIAL.

Dr. Pickworth, Hollymoor, Northfield, Birmingham, would like to have sections, about 1 cm. thick, of formalin-fixed brains from early typical cases of dementia præcox, general paralysis and lethargic encephalitis. Also blocks of the skull containing the sphenoidal sinuses from cases of suicide, lethargic encephalitis and active mental disease, especially if associated with recent epilepsy.

Please state: Initials, age, duration of mental disorder, type of mental disorder, cause of death, and time between death and fixation of material.

Dr. B. H. Shaw, County Mental Hospital, Stafford, would like to have the parathyroid glands from cases of epilepsy.

NOTICES BY THE HONORARY LIBRARIAN.

The Library is open to members between the hours of 10 a.m. and 6.30 p.m.; Saturdays, 10 a.m. and 1 p.m. Books are issued to borrowers between 10 a.m. and 1 p.m., and between 2.30 and 4.30 p.m.; Saturdays, between 10 a.m. and 12 noon.

The Hon. Librarian will endeavour to obtain any books on psychiatry and allied subjects required by members.

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Library Lending Department Regulations.

1. Books shall be lent only to members within the United Kingdom and the Irish Free State who are not in arrears with their subscriptions.

2. No member may borrow from the Library more than three volumes at one time.

3. Books and journals are sent carriage paid from the Library, but members are responsible for the books from the time they leave the Library until they are received back.

4. Books damaged or lost while in possession of a member will be repaired at his expense or must be replaced by him.

5. A member borrowing a book or periodical from the Library shall be required to sign and return to the Librarian a form of receipt for the same, which will be regarded as an acceptance of these Regulations.

6. A member shall be entitled to retain a book or periodical borrowed from the Library for a period of twenty-eight days, unless the book is required by another member, in which case it can be recalled by the Librarian at the expiration of fourteen days.

7. In the event of a member failing to return any book or periodical within seven days after receiving notice from the Librarian (on the expiration of the period referred to in Rule 6), the Library Committee shall be at liberty to purchase another copy, the cost to be charged to such member, who shall not be allowed to borrow another book until the sum thus expended shall have been paid.

8. All communications should be addressed to " The Librarian, Royal Medico-Psychological Association, 11, Chandos Street, Cavendish Square, W. 1 ".

Books Added to the Library.

The Hon. Librarian gratefully acknowledges the following gifts to the Library :

Presented by Dr. W. Starkey :

Ficinus, Marsilius.—*De Vita.* With Menapius, Gulielmus Insulanus.—*De ratione victus salubris.* Basle, 1541.

Celsus, Aurel. Corn.—*De re medica.* With Samonicus, Quintus Serenus.—*De medicina præcepta.* And Fannius, Quint. Rhennius.—*De ponderibus.* The Hague, 1528.

Willis, Thom.—*Pathologiæ cerebri et nervosi generis specimen.* Amsterdam, 1670.

Presented by the Royal College of Physicians :

Catalogue of the Library.

Presented by Dr. Hamblin Smith :

Karpman, B.—*Case Studies in the Psychopathology of Crime.*

Presented by Dr. Kirkpatrick :

Kirkpatrick, T. P. C.—*History of the Care of the Insane in Ireland.* Dublin, 1931.

Presented by Dr. J. R. Whitwell :

Lommius, Jodocus.—*Observationum medicinalium libri tres.* Amsterdam, 1738.

Diemerbroeck, Isobrandus de.—*Anatome Corporis humani.* Leyden, 1679.

Tissot, Simon André.—*Essay on the Disorders of People of Fashion.* (Translated by F. B. Lee.) London, 1770.

Lavater, Ludovic.—*De spectris.* Leyden, 1659.

Presented by Dr. R. Leeper :

Photograph of letter (date April, 1735) from Dean Swift to the Recorder of the City of Dublin, stating his intention of founding St. Patrick's Hospital.

Presented by Miss E. L. Macaulay :

Macaulay, E. L.—*Text-book for Mental Nurses.* 1930.

Circulation of Journals.

The following journals are circulated from the Library :

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.

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Journal of Nervous and Mental Diseases.
Revue Neurologique.
Archives of Neurology and Psychiatry.
Journal of Comparative Psychology.

"Sociorum Annales."

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NOTICES BY THE REGISTRAR.

Bronze Medal and Prize for 1933.

Dissertations for the Association's Bronze Medal and Prize must be delivered to the Registrar by April 30, 1934.

Divisional Prizes for 1933.

Papers certified as eligible for this competition must be forwarded to the Registrar not later than April 30, 1934.

Gaskell Medal and Prize.

The examination for the Gaskell Medal and Prize and the examination for the Certificate in Psychological Medicine will be held in May, 1934.

Applications for entry to each examination to be made to the Registrar, St. Andrew's Hospital, Northampton.

There is no fee for entrance to the Gaskell Prize Examination.

The entrance fee for the examination for the Certificate in Psychological Medicine is three guineas.

NOTICES BY THE GENERAL SECRETARY.

Deaths.

Henry A. Cotton.
Juliano Moreira.
Leonard Dieckmann Hamilton Baugh.
Arthur Ellison.
Henry James Mackenzie.
John Patrick.
Patrick Shaw.

Appointments.

Firth, Arthur Harcus, M.A., M.D., B.Ch.Edin., to be Medical Superintendent, Worcester County Mental Hospital, Barnsley Hall, Bromsgrove.

Rodger, Kenneth Mann, M.B., Ch.B.Glasg., D.P.M., to be Medical Superintendent, Mental Hospital, Bulawayo, Rhodesia.

Honours.

The King has granted Dr. Robert Stewart Miller, M.D., Ch.B., late Egyptian Government Medical Service, Royal Licence and Authority to wear the Insignia of Commander of the Order of the Nile, conferred by the King of Egypt, on his retirement from the service of the Egyptian Government.

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VOL. LXXIX, NO. 327. OCTOBER, 1933.

THE JOURNAL OF MENTAL SCIENCE

BY AUTHORITY OF
THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

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President,

1933—34.

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THE

JOURNAL OF MENTAL SCIENCE

[*Published by Authority of the Royal Medico-Psychological Association.*]

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Part I.—Original Articles.

MENTAL DEFICIENCY.

THE PRESIDENTIAL ADDRESS AT THE NINETY-SECOND ANNUAL MEETING OF THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION, HELD AT COLCHESTER, JULY 5, 1933.

By FRANK DOUGLAS TURNER, M.B., M.R.C.S., L.R.C.P.Lond.,
Medical Superintendent, Royal Eastern Counties Institution.

I AM intensely proud of the very great honour you have done me in electing me President of the Association for the ensuing year. I believe I am right in saying that this is the second time only in the history of the Association that you have chosen as your President one whose work in life has been entirely connected with mental deficiency, Dr. Fletcher Beach in 1900 being the first. In taking "Mental Deficiency" as the subject of my address, therefore, I am comforted by the reflection that I have a fresh subject about which I can roam at will without the fear which I understand generally gnaws at the vitals of Presidents lest they should choose a theme that has already been dealt with in past addresses.

To France undoubtedly belongs the honour of having first attempted to do something for the mentally defective. Séguin, a pupil of Itard, believed that idiocy was curable, and founded in Paris in 1837 the first school for the specific purpose of educating idiots. He called his method of treatment the physiological method and laid down that one of the first principles in treatment was to supply the deficiencies of the muscular apparatus. The training began with the overcoming of muscular incapacities.

I think if I had wanted another title for my address, I might have headed it "The Wheel Always Comes Full Circle". Over and over again in the case of defectives during the past 100 years it has happened that methods and

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ideas thought out quite early in the movement and later discarded and forgotten, have been rediscovered and hailed as new ideas. Séguin's methods of 100 years ago are the basic principles of training in the occupation centres of to-day. In all classes for the lower grade defective children it is now recognized that the first necessity is to awaken the senses, educate the larger muscles of the body and infuse vitality, and that only after success with these points can we hope for success with finer movements and the training of the higher centres.

When I first came to the Royal Institution at Colchester, 28 years ago, the aim of school classes was that all children must be taught to read and write. A whole class of lower grade imbeciles would sit day after day in front of their slates trying to copy round O's. If they succeeded they were with great triumph promoted to the copying of a's. Few got beyond that to the capital "A". Now the teaching of letters and writing for this type of child has been quite given up.

The early years of Queen Victoria's reign were full of philanthropic schemes, and amongst the foremost philanthropists of the time was Dr. Andrew Reed, who founded not only the first two asylums for idiots, but also several orphan asylums and the Royal Hospital for Incurables.

Articles appeared in *Chambers' Journal* in January, 1847, containing a description of Séguin's work in Paris. These were read by a Mrs. Plumbe, who took them to Dr. Andrew Reed, and he spent his summer holiday abroad studying the matter.

Other people were interested by him, a committee was formed and a meeting held at the Mansion House in October, 1847. It was decided to found an "Asylum for Idiots", and the first patients were admitted in April, 1848, to a house at Highgate.

This house soon proved too small, and in 1850 the original buildings of the present Royal Institution in Colchester were taken over. These had been erected for a railway hotel. In the course of the next few years two farm-houses in the neighbourhood of Colchester were rented and used as branches, ancillary premises or colonies. The prevailing idea in those days, however, was to concentrate an institution in one place, and great efforts were therefore made to collect sufficient money to build on one spot a "Model Asylum" and to scrap these ancillary premises. These efforts succeeded, the asylum was built at Earlswood, near Redhill, and in 1858 the last of the then patients at Colchester were transferred to Earlswood.

When the patients were removed from Colchester, Dr. Reed began the task of founding an asylum for idiots for the four eastern counties only, and in 1859 the present institution at Colchester was opened for 100 idiots from Essex, Suffolk, Norfolk and Cambridge. The first Superintendent was a layman, a Mr. Millard, who was one of the original members of Dr. Reed's first committee in 1847. For nearly 30 years the numbers remained at 100.

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In 1864 my father started work at the institution, where he remained till he died, 49 years later. I need not mention all the extensions that have taken place. They began in 1883 through the generosity of Mr. William Birkbeck of Norwich, and have been almost continuous since that date.

This asylum, together with the one at Earlswood, and the three later ones at Lancaster, Starcross and Birmingham, were all commenced, built, extended and maintained by the charitable subscriptions of philanthropic people. Apart from certain asylums, technically, I believe, special workhouses, set aside by the Metropolitan Asylums Board, these charitable institutions remained for many years the only institutions in England where defectives could be specially trained and cared for. Without wishing to appear presumptuous, I suggest that one of the secrets of the success of social work in England in the past has been that in the first instance nearly every great cause has been commenced by the voluntary effort of people who, stirred by some great evil, or by some great need, put their shoulders to the wheel and their hands in their pockets to do what they could to help their fellows. I think this fact is too little recognized nowadays. It has generally been the case that the State has only given help after years of voluntary effort have pointed the way.

Though special day schools were permitted by the Act of 1899, it was not until the passing of the Mental Deficiency Act in 1913 that the local authorities were empowered to build their own institutions for defectives and to contract with existing institutions to take their cases on payment. Though this is 20 years ago, the Royal Institution at Colchester still has a charitable income of nearly £10,000 a year and maintains about 200 patients by its charitable funds. Though the Institution has in addition provided nearly 1,300 beds for patients sent and paid for by the local authorities, and though it has an endowment fund of £50,000 and nearly 400 acres of land, not a single bed, not a portion of any one of the buildings or land now in use has been provided by any local or statutory authority. All has been provided by the directors of the institution out of charitable funds, and in addition, during later years, out of certain profits made by the reception of paying cases.

Just before Christmas last, however, after years of planning and negotiation, a further extension for 444 patients was commenced on a site a few hundred yards from the existing Institution. The money for this extension is being found by the local authorities of Essex, Suffolk and Cambridge, and when these buildings are opened these authorities will have proportionate representation on the governing body. This extension forms the first section of a much larger plan which will eventually add 1,100 or 1,200 beds and bring the total number up to about 2,400.

I mention this extension because I believe it is the first time that several authorities under the Mental Deficiency Act have joined together with an institution which is still a voluntary one to build and furnish a large extension. It will cost about £180,000.

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No doubt in years to come, and as the local authorities provide further extensions at their own expense, the governing body of the institution will gradually lose its present distinctive voluntary character, the charitable subscriptions will gradually diminish and eventually, I suppose, the institution will be absorbed by the local authorities. At present that day seems a distant one, as I believe these authorities recognize the valuable and distinctive character and attributes possessed by a voluntary institution and are glad to refrain from doing anything that may imperil its existence.

You will have noticed that I have so far spoken of the "idiot" and "asylums for idiots". This does not mean that the first institutions dealt only with low-grade cases. The word "idiot" was then the only legal term, but it included all the grades of mental defect we now recognize. Dr. Duncan, who was an F.R.S. and the first medical officer of the Institution at Colchester, in his first Annual Report, divided the objects of the charity into three classes, idiots, imbeciles and simpletons. The latter word he used for the highest grade, and with him the term "feeble-minded" covered all three grades of defect, as it now does in the United States. His definitions of the three terms could not be bettered to-day, and he specially laid it down that the simpletons were to be distinguished from the backward and ill-taught The name "Asylum for Idiots" was then a title to be proud of; it is only latterly that it has become a term of reproach.

I admit that the proportion of high grades to the medium and lower grades was not then so high as it has been since the passing of the Mental Deficiency Act; yet there were undoubtedly many of the highest grade of feeble-minded received under the old term "idiot". This is proved by the fact that five of the earlier pupils admitted were at the end of their term of election engaged on the staff of the asylum, and as early as 1860 five pupils were able to make panelled doors.

In those early days the idiot asylums were under the Lunacy Acts. In course of time people become so impressed with the absurdity of having to use all the formalities of the Lunacy Acts if a parent wished to send a defective child to an institution for special education, that in 1886 an Act labelled the Idiots' Act was passed. It was under this Act that the voluntary asylums for defectives worked until 1914. It legalized the use of the word "imbecile" for the highest grade of defect, and allowed a defective to be sent to an institution on one medical certificate and a statement by the parent or guardian. This very simple form is still fortunately retained in the Mental Deficiency Act for private and charitable cases, except that an additional medical certificate is now required. In the drafting of the Idiots' Act the promoters of the bill desired to use the term "mental defective" instead of "imbecile", but could not get it through Parliament. It was presumably too advanced for those days.

It was not till 1914, that under the Mental Deficiency Act, the term

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"feeble-minded" was legalized to cover once again the highest grades of defect, and now it, in its turn, has become a word of reproach.

The aim of all the early asylums for defectives, as of Séguin in Paris, was to cure the defective. There was then no intention of lifelong care. They commenced as schools, with schoolmasters and industrial trainers. Their aim was education. In the words of our first report "to try by the skilful and earnest application of the best means in his education to prepare him as far as possible for the duties and enjoyments of life". It was felt that if only the right methods of teaching could be found the great majority of the patients could be so far improved that they would be able to return to the world. The first asylums taught almost all the trades which can be found nowadays in the most modern institution. It was only after years of effort and experience that our fathers came to the melancholy conclusion that though great improvement was possible, yet lifelong care of some kind would be necessary for large numbers of defectives.

Following on this conclusion, public opinion went, as usual, to the opposite extreme, and there developed in England as well as in the States what has been well named by Dr. Stanley Davies of New York "the alarmist period". The discovery of our inability to cure many defectives admitted to the institutions and to the special schools was, no doubt, the first cause of this alarm, but it was greatly increased by the invention of intelligence tests. Methods of testing the intelligence by means of standardized tests were developed in profusion and used with that enthusiasm which most of us bring to new developments. Tests were relied on as the ultimate and decisive factor on the question of feeble-mindedness. Below a certain mental age which at first was put at the very high standard of twelve years, all were supposed to be defective, and we evolved a pretty scheme by which defectives with a mental age below 4 years were labelled idiots, from 4 to 8 years imbeciles, and from 8 to 12 years feeble-minded. No one now believes in that.

I think it may fairly be said that in England we never went quite so far in this direction as some authorities in the United States, and it soon became apparent that if these standards were adopted we should be compelled to label perhaps one-third of the population as feeble-minded, which was absurd. Statistics were also published to show that the great majority of women in refuges were mentally defective, and that a large percentage of the prison population was feeble-minded. Nowadays, I believe medical officers in the prison service tell us it needs more than the average amount of brains to earn a living by crime.

Emphasis upon eugenics and heredity studies all seemed to teach the same alarmist doctrine. Opinion on the flood of children of a poor type, supposed to be brought into the world by defectives, has been largely formed not on reliable figures, but on collections of individual family histories, more especially those well-known efforts from the United States, the Kallikak family and the

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Jukes family. These seem to prove—like a lesson from a copy-book—the inevitable downfall of the human race, and the swamping of the good stock and the average normal person by the defective and incompetent.

Nowadays, it is recognized that the compilation of these family histories was hopelessly unscientific, but the effect of this propaganda was to create a deep feeling of alarm. At all costs the propagation of defectives must be prevented and lifelong care by segregation in institutions was thought to be the only remedy. The institutions which began as schools, electing their pupils for a limited period only, were urged to retain them for life.

Even yet I am not quite sure that this alarmist period in the treatment of defectives is over. At times you may be tempted to believe that the question is still acute. You may even be stampeded into thinking that if something is not done to prevent defectives propagating, the world will be overrun by them, and the few of us able to work will have all our earnings absorbed by the hopeless task of maintaining the inefficient and the defective. Though I do not suppose that anyone nowadays would repeat the assertion, yet it is less than ten years ago that a well-known society, established to improve the race, published a pamphlet which said that "if all mental defectives could be prevented from having children, the number of defectives in the country would be halved in about three generations". To anyone who has everyday personal experience of defectives and their families, that is a statement which seems to have no foundation whatever in any knowledge we at present possess. The very great majority of defectives are not the children of defectives.

The report of the Wood Committee, of which I had the honour to be a member, has often been misquoted to give substance to these alarmist views. It has been said that this Committee stated that the number of defectives had doubled in the last twenty years. The Wood Committee said nothing of the kind. It said that the number of defectives ascertained by Dr. Lewis in the areas he investigated was twice as high as the number found in other areas by the investigators of the Royal Commission on the Feeble-minded twenty years previously. That is an entirely different proposition and does not of itself imply any increase at all. It may, and in my opinion does, depend almost entirely on the more thorough nature of the later investigation. At the time of the Royal Commission our ideas of what constituted mental deficiency were nothing like so definite as they are now. The great majority of the cases we now call feeble-minded would not have been certified then. They existed just the same. In those days little interest was taken in the question. There was no duty imposed on a local authority to find out the number of defectives in its area, and there was no stimulus to do it. There were no voluntary associations for mental welfare, the number of special schools for defectives was small and there was no incentive for the teachers to report defective children. The

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investigators for the Royal Commission had therefore a difficult task when they set out to ascertain the numbers of defectives in certain areas. Dr. Lewis, on the other hand, found an awakened public interest and conscience quite different to that existing in 1904; he had the benefit of the ascertainment of defectives already carried out by the local authorities under their statutory powers given in 1914, the assistance of voluntary associations and the willing cooperation of the education authorities and the teachers. Is it any wonder that he ascertained double as many defectives as the investigators for the Royal Commission?

My opinion is that while there has certainly been no great increase in the real number of defectives, it is possible there has been a slight increase, due partly to the lowering of infant mortality and to greater longevity of defectives, but I do not believe that defectives are on the average more prolific than normal people of the same social standing, or that their children are necessarily or even often defective.

Defectives in institutions certainly live longer than they did. In the five years before I was appointed here, the death-rate was on the average 7·5% each year. In the last five years it has been 1·4%. If the death-rate had remained at the same figure as before 1905, the number of deaths in this last five years would have been 503, but the actual number of deaths has been 96. The number of institutions in England is scarcely enough, however, to have much effect on the population taken as a whole.

We still, however, get pronouncements from eminent men in other walks of life emphasizing the alarmist view. I cannot help feeling that if these eminent men had made as close a study of mental deficiency as they have of surgery or theology, or even if they had followed recent developments in genetics, their statements would not be quite so dogmatic. I feel, too, that their views may be coloured by a misconception of what mental deficiency really is. Popular opinion looks on it as a pathological entity, a single type of disease. Years ago most of us thought of mental defect in this way as a small, but distinct group of individuals forming more or less a distinct species and differentiated from the normal by a marked divergence in their intellectual and emotional life. The conception of mental defect as a single entity is, I believe, wrong. Mental deficiency is a dozen, twenty or more different things, each with a different cause and therefore a different remedy. In some cases it is due to a definite mischief of which we know the cause, like birth injury, congenital syphilis or some inflammatory condition of the brain like encephalitis, or to an alteration in the internal secretions of some glands. These are the hopeful types of mental defect. We know the causes. We may reasonably hope that by more skilful ante-natal and natal care and greater knowledge of disease processes these types of defect may be largely eliminated.

I do not think that any of us who have made a study of mental deficiency

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would be prepared at the present time to say how much defect is due to those preventable causes, how much, if any, is due to heredity acting alone and how much is due to an inextricable mixture of environment and heredity. Nor should we be prepared to give a firm opinion as to how far, if at all, the brains of the higher grade defectives differ from the normal brain in the same station of life.

In exactly the same way as the earlier books on mental defect contained photographs only of the lower type of case, the obvious idiot, so we have drawn our ideas as to the brain-cells of defectives from histological examination of the brains of idiots and imbeciles. In most of the cases examined the defect was probably due to gross cerebral damage or disease changes. The conclusions almost certainly have no importance for the higher grade cases. An urgent need is the histological examination of the brains of higher grade defectives of different mental ages and their comparison with the brains of supposedly normal people of the same social standing. I doubt if we should find any differences.

We at Colchester are indebted to the far-seeing outlook of the late Sir W. Morley Fletcher and the Medical Research Council who, for the last two and a half years, have given a substantial grant in aid of the Research Department. This grant, together with grants from the Darwin Trustees and the Committee of the Institution, has enabled us to maintain a medical man as head of the Research Department, and now three assistants. We believe that research will bring out important and vital facts on these questions of heredity and environment. Without committing the Department in any way, my own view is that a much smaller proportion of mental defect is due to the family hereditary type than was formerly thought to be the case. It is more satisfying of course to blame poor old heredity. Then we can feel we are not responsible. If we admitted mental defect was in many instances due to environment, our consciences might make us uncomfortable.

I have been especially struck with two points. One is the great effect of environment on the production of *certified* defectives. I can point out case after case in which I believe the early environment has been the real cause of the defective being certified. If the environment had been better the defective would not have been certified, but would probably have led a blameless, hard-working, self-supporting life, though in perhaps a lowly sphere.

The legal definitions of a defective are social in character. They do not depend on mental age or specific tests or educational capacity, but on the social capacity to live in the world to which they belong. These definitions are admittedly not scientific, but they are practical, suited to the world as it is, and they work.

It is a truism to say that civilization produces defectives by making living conditions more difficult and that a person may be regarded as defective in

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a big city and not in a country village. Plenty of people who a thousand years ago were no doubt highly respected members of society would nowadays be called defective. It did not take a lot of intelligence to run round the country and hit another man over the head with an axe; nothing like so much as is needed nowadays to get out of the way of a motor car.

My second point I owe to Dr. Lewis's inspiration, even if he may not agree with all my conclusions. May I say that this paper was written weeks before an article by Dr. Lewis on "Types of Mental Deficiency" appeared in the last number of the *Journal of Mental Science*. I apologize to him for so inadequately following in the direction he has pointed out. I believe that when we have excluded the cases definitely due to disease or injury, there remains a large proportion of defectives who are not pathological in any way. There is no question of a so-called neuropathic inheritance, whatever that may mean, or of "carriers" of defective germ-plasm. They are just ordinary, normal people. If you test the intelligence of large numbers of people in all stations of life and plot out the numbers falling into each mental age in a diagram you get a curve. The curve falls more and more quickly towards the zero-line at each end. The majority will have an average intelligence and will belong close to either side of the centre, the highest part of the curve. The number of those who have superior intelligence decreases more and more rapidly as you get further from the centre. The number of those with inferior intelligence decreases in the same way the further you get below the average. There is no sharp line of demarcation anywhere between the lower intelligences, the average intelligences and the higher intelligences. The curve is a continuous one. You cannot anywhere along it draw a line and say above this line is normality, below it is abnormality. The people whose intelligence falls below the average are just as essential to a curve of intelligence as those whose intelligence falls above the average and just as normal, if not more so. A below-average intelligence is no more abnormal than a below-average height. We do not consider a person an inch or two below the average in height to be abnormal or defective. Why should we consider a person an inch or two below the average in intelligence abnormal? Both are just natural variants. It is as natural to be below average as to be above average.

Life has become more difficult, more complicated as civilization advances, and as mental defect is entirely a social question, increasing numbers of those who fall among the lower sections of the intelligence curve fail to keep up in the race. We expect from them more than they have the capacity to produce. Naturally they fail, and to prevent them acting as grit in the wheels, and for their own protection, we label them defective and certify them. That does not make them pathological or diseased. They are just normal people whose intelligence is a little below the average, but who very often are able to do the so-called menial jobs of the world better than those of higher intelligence. It is especially when you add to this below-average intelligence

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bad home circumstances or a bad or too difficult working environment that you get failure.

It can be argued that if you had omnipotent power and could at one stroke eliminate from the world all those below a certain level of intelligence you would still not eliminate mental defect. Amongst those who remained the average of intelligence would necessarily be raised, but some would still come below this new and higher average point. Owing to the raising of the average, competition would be keener, life would become still more complicated, and those who fell below the new, though higher, average would fail in the struggle, would be unable to manage their affairs according to the prevailing higher standard and would therefore be labelled defective.

If there is any truth in my suggestions, of which I am the worst judge, then it logically follows that do what you will, sterilize whom you will, even follow the example set by one state in America where they brought in a bill recently to sterilize all motor-car thieves immediately on conviction, you will still fail and are bound to fail to eliminate the normal people with somewhat below average intelligence who cannot react successfully to their environment and whom, therefore, we label mentally defective. The only hope for the future lies in tackling the environment—instead of the far less troublesome method of cure by wholesale surgical operations.

In my opinion eugenists fail to distinguish between people of a certain intelligence level who partly, at any rate, because of their environment fail in the world and are labelled defective, and those hundreds of thousands, if not millions, of people who, with exactly the same intelligence, manage to live an ordinary self-supporting life in the world.

I have often wondered what becomes in after life of the school-children diagnosed, and no doubt properly diagnosed, as feeble-minded, when they grow up. No investigation which has ever been carried out can discover amongst the adults of the community anything like the percentage of defectives there should be if all those diagnosed as defective when children proved to be defective when grown up. What happens to them? Presumably they are supporting themselves and living decent lives.

There has just been published in the American journal *Mental Hygiene* (April, 1933) a report on a follow-up of children who were in a special school seventeen years ago. There were 122 of them. It is the report on the lowest group of these which is most illuminating. Seventeen years ago it was judged that 22 had no prospect of becoming self-supporting. Of these 17 are still living, and it is found that 12 of them are entirely self-supporting even in these difficult times. The whole group has had 173 children, and only 3 were diagnosed as defective. The records of the Birmingham Special Schools After-care Committee are of greater value because they deal with much larger numbers. They point the same lesson. In my opinion the alarmist view of mental defect was founded on the mistaken idea that subnormal or

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below-average intelligence is the same thing as certifiable feeble-mindedness. It is not. Certifiable feeble-mindedness is something added to subnormality, namely (excluding the injury and disease types), bad environment. Large numbers of the higher grade defectives would not have been certified if their environment had been good.

If we take this as a text, we have prepared the way for the modern treatment of mental defect. This modern view is absolutely at variance with one of the conclusions of the Report of the Ray Committee, which said that there was no evidence that more than a negligible number of the mentally deficient are improved by treatment. We believe the truth to be exactly the opposite, namely, that the great majority of defectives are very much improved by the training and stabilization they receive in institutions, so that many of them can be sent back into the world to earn their living or with some supervision to be cared for more simply and less expensively than in an institution. The wheel has come full circle. It is this aim, this belief, this return to the faith Séguin preached that is behind all the modern outlook, behind the methods used nowadays in institutions for defectives.

At the present time more than 10% of the patients on the books of the Royal Institution are on licence. Many of them have been on licence for years. Yet each of them was certified and sent to the Institution as in urgent need of institution care, and with the present shortage of beds the need must really have been urgent or they would not have stood a chance of being admitted. Other institutions have obtained even better results.

I admit it places the institution for defectives in the forefront of the fight and possibly the superintendent of such an institution may need to be as efficient as Pooh Bah in the number of appointments and duties he is capable of directing.

The institution of the future should be a flowing lake constantly fed by incoming patients, but just as constantly passing back to the world in several directions and by several different methods many other patients who have been trained and stabilized while under its care. Resocialization is the aim. Spread the available jam of teaching and training over the greatest possible number. It will never be possible to provide a sufficient number of big training institutions to allow of every mental defective in the country being retained permanently. The expense would be prohibitive. The problem is to find the best way in which the central institution can, within the limits of its capacity, give the greatest service. I am not sure that in the future it may not be a matter for reproach that any superintendent should ask his committee for increased accommodation and more beds. He would be told that he was failing at his job, that of resocialization. At present this seems a counsel of perfection, but it may well be the goal for which we should aim.

The instrument by which we can achieve this resocialization is an ever increasing and more effective use of one of the most valuable provisions of the

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Mental Deficiency Act, the power to grant leave of absence or licence to defectives from an institution for just as long as may be necessary. The Act lays down no period after which licence must be determined. It can be renewed from time to time on evidence of good behaviour, I know of many patients who have remained successfully on license for from five to ten years, though the majority of the successful ones get discharged before this time. We owe this idea of prolonged licence chiefly to Dr. Bernstein, of the institution at Rome, U.S.A.

Here again events repeat themselves, and we have come back to a point we started from. I found recently in one of the earliest reports of the Royal Institution that patients who had been improved used, in those days also, to be sent out on licence. The practice, however, seems to have been given up and forgotten.

Dr. Bernstein not only sends many of his patients out on licence; he has, in addition, what he calls "colonies", forming a valuable kind of half-way house. They are often miles from the central institution; they are separate houses or farms from some of which the boys and girls go out to daily work in the neighbourhood; in others they work in the home or on the farm; but in every case more liberty is allowed than in the central institution. They are trying-out places to determine whether or not the defective can stand the increased responsibility and the greater freedom. A certain number fail and have to be returned for a time to the central institution for further stabilization. Others succeed and are then placed out on licence away from the colony.

In England we have copied Dr. Bernstein in this respect also, and many of the larger institutions now have branches or colonies separate from the central institution, where their boys and girls can be tried out, given greater responsibility, gradually resocialized, and got back to the world again. Branches like this have definite advantages and some disadvantages. They allow of better classification of patients than can be obtained even with the modern system of villa building for institutions, but the chief reason for their existence is to permit greater freedom and give more responsibility than is possible in the big institution.

Disadvantages are the greater expense of catering and stores, the greater outlay on staff. These are partly offset by the fact that houses can often be rented, so that there is no outlay for capital expenditure beyond some structural alterations and the furniture.

I would seriously recommend to those of you who find a difficulty in getting funds for capital expenditure the provision of beds by this simple method of renting large houses anywhere in your respective areas and using them as branches or colonies of the central institution. Here, of our 1,500 patients, 570 only are in the central institution. Nearly double that number are in branches or colonies or on licence. We have altogether nine of these branches.

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The starting of fresh branches becomes almost a habit. One gets to know exactly what will be wanted, and the renting of a new house, its conversion, furnishing, opening and use become almost routine work. Nowadays large houses can be had almost in any number for the trouble of seeking them.

In England they are often called hostels, because from them the patients go out to daily work in the neighbourhood and return to sleep and spend their leisure time at the branch, the matron of which is responsible for finding the job and all the necessary supervision.

Necessarily, the patient has to make the journey each day alone. The work of the particular job has to be done, but there is always the matron to fall back on, to smooth things over if they get too difficult. Wages are handed to the matron, who gives pocket money at her discretion, and banks the rest for the future. Clothes can be bought, again at first under supervision. Later comes the job on licence. Even then it is advisable, in my opinion, that the defective should at first return to the branch during leisure time, partly because of the added safety this gives, partly because of the opportunity it affords for gossiping, swanking and keeping up such activities as Girl Guides. Later, they get their own bank-books, and return less and less often to the hostel. The institution of the future will have hostel branches or colonies in each of the large towns in the area it serves.

I believe that all defectives in any area who need more than supervision should come in the first instance to the central institution. That is the inflowing stream. I do not agree with defectives being sent direct to the guardianship of foster-parents. If a defective has failed at home, is it fair to the defective or to the guardian who will often know little more about the management of defectives than the parents, to send the case to much the same environment? More important still, the defective has missed the skilled examination, training, treatment and the stabilizing effect of the institution.

The inflowing stream of defectives is studied, trained, treated by experts in the schools, the workshops and, if necessary, in the hospital. They receive the best available medical and technical treatment. Above all, every effort is made to stabilize character, to increase the power of fitting into a new environment.

No doubt many of those received will always remain in the central institution or one of its colonies. These are the lower grade nursing and custodial cases, most of those with bad habits, most of the epileptics, and a proportion of the high grade unstable cases. That cannot be helped. But there should be, and if the scheme is to be of any use there must be, a steady outward stream to the smaller lakes which are to be fed from the parent institution. These smaller lakes are represented by the hostel branches, by foster parents, by the simpler type of institution and, to a small extent, by the defective's own home.

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The outward stream should carry—

Some to the hostel branches of the institution,

For day service,

For living-in service on license.

Some, perhaps not many, back to their own homes on licence

To work outside their homes,

To work inside their homes,

And the medium grade cases to be cared for at home.

Perhaps not many, because if the home has in the first instance failed in care or produced instability or unmanageability, the home will probably produce a return of these symptoms after a short time, in spite of the institution training.

Some to foster parents on license—

To work outside their new home,

To work in their new home,

And the medium grade cases to be cared for in their new home.

Some to the simpler type of institution.

This means either a branch or colony of the central institution, the special wards of a good workhouse, or one of the existing small homes.

The essence of the scheme, however, and a necessity for its smooth working, is that all defectives who have once been admitted to the institution, whether residing later at the hostel, in living-in service, with foster-parents, or in the simpler type of institution, must remain on the books and be on licence from the central institution. This ensures absolute and immediate fluidity of movement inwards as well as outwards, between the centre and all other methods of treatment. It should be just as easy to move inwards again to the central institution or to move from one to the other of any of these methods of treatment, as outwards from it. This can only be secured by the system of licence, because under it you can act immediately. The important thing is to be able to move a patient anywhere within the scheme, without difficulty and without the delay that is caused if you have to obtain a magistrate's order before a case can be moved.

There are other things the modern institution should do. Research I have already mentioned. Every large institution should be a training school, not only for the teachers and nurses on its own staff, but for anyone who wishes to take up the work, and especially for the staffs of the smaller homes who cannot otherwise obtain the necessary experience.

The staff should form a clinic for consulting and diagnostic purposes for the area around. Some think the medical superintendent should act as adviser to the local authority, but I doubt this. It is better that the superintendent of an institution should not be in any way responsible for the initiation of steps which will send patients to his institution. Some of the staff should be detailed to visit and keep in touch with all defectives on licence.

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I have outlined what I believe should be the future policy of institutions for defectives. It is a recognition that the defective is in the majority of cases a normal person; it is a turning away from the alarmist doctrines of the immediate past back to the wider outlook of our forefathers—training and stabilizing the defective and leading him back to the world from which he came.

I am afraid I have wearied you all, but I hope you will forgive me, because of the great pleasure it has afforded me to air my pet theories.

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COMMUNITY CONTROL OF MENTAL DEFICIENCY IN THE UNITED STATES.*

By EDGAR A. DOLL, Ph.D.,

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I HAVE the honour to present to this Association the compliments and good wishes on the American Association on Mental Deficiency, formerly the American Association for the Study of the Feeble-Minded. Permit me also to express the admiration of students in the field of mental deficiency in the United States for the long record of excellent work on this problem in England. We have appropriated much of your information, and your conclusions have strongly influenced our professional points of view. I wish also to express my personal appreciation for the privilege and honour of addressing this Association, and to acknowledge the courtesy of your President, Dr. Turner, for his kind invitation to attend this meeting. My presence here is the fulfilment of a long-standing desire to be more immediately familiar with your work on mental deficiency and allied problems. It is a distinct personal and professional satisfaction to meet your leaders in this field, and to observe your achievements at first hand.

My own interest in the community control of mental deficiency is directly attributable to an article by Miss Evelyn Fox, which appeared in your valuable journal *Mental Welfare*, five years ago, wherein she reported some of her impressions of our work in this field. Miss Fox commented on our relatively high development of institutional facilities in contrast with our almost complete lack of community programmes.

There are few developments in the United States which compare favourably with the growth of community control in England. We have no programme such as the one outlined by Miss Fox at the First International Congress of Mental Hygiene, at Washington, three years ago. My remarks will deal, therefore, with the general problem of control of mental deficiency in the United States, with reference to those features which might be difficult for a visitor to apprehend from even an extended visit.

TERMINOLOGY.

I trust you will bear with me if my terms are a little confusing. We use the term "feeble-minded" in a generic sense to include idiot, imbecile and moron. The term "moron" was coined by Goddard, in 1910, to avoid the

* Read at the Annual Meeting of the Royal Medico-Psychological Association at Clacton-on-Sea, July 7, 1933.

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confusion then prevailing, because " feeble-minded " was used both as a generic term for all grades of deficiency, and also as a specific term for the highest grade. With us, the term " mental deficiency " is generally synonymous with the term " feeble-minded " in its generic sense. Recently, however, " mental deficiency " has been used in the United States to include also the intellectually retarded, whom you term " mentally inefficient ", rather than " deficient ".

Incidence.

We have had many surveys of the incidence of mental deficiency, but the results are somewhat confusing, owing to variations in procedure, terminology and representativeness of the areas studied. Generally speaking, we have concluded that 1% of our total population is mentally deficient. Thus, a report of the Surgeon-General of the United States Army, in 1920, showed that 12 per thousand of men drafted for military duty during the world war were rejected by camps and local boards in the United States as unfit for military duty because of mental deficiency. The number varied from 31 per thousand for the State of Vermont to 2 per thousand for the State of Arizona. This wide variation is influenced by social factors in different geographical areas.

The general estimate of 1% has been amply confirmed by both intensive and extensive local surveys. The figure rises in the rural districts, and in those States which have inbred populations. The figure falls in the western States, where there is less in-breeding. Applying this percentage to the United States as a whole, we estimate that our population includes at least 1,000,000 mentally deficient persons.

It is generally agreed that at least 2% of our school population are mentally deficient. This figure applies especially to pupils between the ages of 6 and 14 years. The estimate varies markedly according to locality, and according to socio-economic areas within the school districts. It is difficult to be exact, because many school surveys have been based on the results of mental tests alone, and have not always distinguished between the moron and the dull normal child. The percentages run as high as 4%, or even 8% in some districts, but these higher figures probably include large numbers of dull normal children. With an elementary school population of approximately 25,000,000 children, the 2% estimate yields a total number of 500,000 mentally deficient children of compulsory school age.

Our principal agencies for dealing with the mentally deficient are: (1) public and private institutions; (2) elementary schools; and (3) public welfare organizations.

The Institutional Programme.

Nearly every State has at least one public institution for the mentally deficient; many have two. Massachusetts, Ohio and Pennsylvania each

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have 3, New Jersey has 4, and New York 6. There are 83 State institutions in 44 States and the District of Columbia. Hawaii also has one institution; Arizona and Utah have authorized construction; Alaska, Arkansas and Nevada have no provision.

Ten of these States provide institutional care for the mentally deficient with the epileptic. Many State hospitals for the insane also receive mentally deficient patients. Almshouses and correctional institutions also care for an unknown number of them.

In some States there are also large private institutions, such as the Pennsylvania Training School for Feeble-Minded Children, at Elwyn, and the Training School at Vineland, New Jersey, which care for fairly large numbers of State patients in addition to private wards. There are nearly 100 private residential schools, some of which provide 100 or more beds, but most of which have less than 50.

The total number of patients in institutions for the mentally deficient in 1928 was between 60,000 and 65,000, and is now probably about 80,000. Probably the number provided for in all types of institutions exceeds 100,000, but this cannot be determined accurately at present.

It will be seen from these figures that only about 6% of the estimated number are cared for in public institutions. This is approximately 6 persons per ten thousand of the total population. In such States as Massachusetts, New York and New Jersey, where institutional provision is most extensive, we find 10% of the estimated number, or 10 persons per ten thousand, in institutions, but for the country at large 90% to 95% of them are living at home. We are only beginning to realize that something in the way of a systematic programme should be provided for this vast majority of mentally deficient persons who do not receive institutional care. Our efforts have previously been so concentrated on institutional measures that, in spite of a number of investigations which have revealed the very great significance of mental deficiency as a social problem in the community, little has been done toward developing community programmes.

Our institutions, generally speaking, are of a high order. They have, on the whole, an excellent architecture, with modern features of construction and high standards of personal care. Our institutional facilities are also good in the direction of education and training, and most of our general knowledge of special class instruction has been derived from institutional experience.

The average annual cost of maintaining these institutions is about $500 *per capita*, exclusive of the investment in plant and grounds. This *per capita* cost seldom drops below $350, and seldom rises above $650. The investment cost in plant and equipment is typically from $2,000 to $4,000 per patient. The annual cost of care in private schools is exceedingly variable, ranging generally from about $900 to $1,800, but rising in some instances to $2,400, or even higher. Most private institutions must charge for investment cost

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as well as for maintenance, and they usually have larger staff ratios and more expensive standards of operation.

I need not dwell on the details of institutional management and accomplishments. Many of the larger institutions have branch colonies, some of which are, in effect, separate institutions. Colony houses, or occupation centres, have also been developed to some extent, but only the Rome State School in New York has accomplished anything of major importance in this direction.

With the increasing awareness that only a small percentage of the mentally deficient are cared for in institutions, we have come to realize that mental deficiency in itself is not a sufficient reason for institutional segregation. Rather, it is mental deficiency plus some complicating factor, such as dependency, social maladjustment, delinquent behaviour, crippling, social status of the family, misconduct at school, and so on. We are beginning to consider that, while mental deficiency cannot be cured, certain of its social consequences can be overcome through treatment and training. When the plus factors which precipitated institutional commitment in a given patient have been overcome, then further institutional care is presumably unnecessary.

This idea is leading to a new conception of the possibilities of parole, so that parole is not thought of as limited to self-sustaining morons, but is extended to all grades of mental deficiency where the original reasons leading to commitment have been removed, and where the subnormal individual can therefore be restored to his family or to the community. Thus, many idiots and imbeciles are given parole successfully, not in the sense of becoming independent members of society, but rather because the training provided in the institution, plus the changes which meanwhile have taken place in the home environment, make institutional care no longer imperative. This is expected to make possible a larger turnover in the institutional populations, and thereby to extend institutional facilities to more patients, but for shorter periods.

In 1922 there were approximately 4,000 patients on parole from State institutions. In 1928 this number had increased to about 8,000. Probably at the present time at least 12,000 patients are on parole. This is equal to about one-seventh of the total institutional provision.

THE SCHOOL SITUATION.

As noted above, there are about 25,000,000 children of compulsory school age in the United States, and it is estimated that about 500,000 of these are mentally deficient. A survey by Dr. Arch O. Heck, in 1928, showed that 2,552 special classes were then provided in 266 cities, with an enrolment of 46,625 children. Last year the White House Conference Sub-Committee on Mental Deficiency reported that 15 States have enacted State laws for the special education of mentally handicapped children, New Jersey, my own

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State, in 1911, being the first to make such provision. Of 30 States making no such legal provision, 22 (including Hawaii and the District of Columbia), nevertheless, provide special education for retarded children. Dr. Elise H. Martens reports that in 1930 there were 315 cities in 40 States providing special schools or classes for 55,154 mentally subnormal children. New York City provides 366 such classes, Chicago 162, Philadelphia 157, and Detroit 128. The enrolment ranges from 13 children in one city to 3,600 in another.

It is evident from these figures that only about 10% of the estimated number of mentally deficient children of compulsory school age are provided for in the elementary schools, and that such provision is confined to a relatively small number of cities and States. This lack of concern on the part of most of our school systems is not due to lack of information, for our scientific journals contain many reports on the problem and many educational leaders have vigorously urged the need for more extensive provision for such children. Many school districts exclude the lower grades of mentally deficient children, even though this is contrary to school law. Most of our school boards are unwilling to face the additional cost of special class instruction, which is usually about $200 per pupil, or from two to three times the cost of ordinary instruction in the regular grades. Likewise, school superintendents generally seem unwilling to make the administrative arrangements necessary for the success of special classes.

Few of our schools take steps to ensure institutional care of those who are too low grade to profit from ordinary instruction under day-school conditions. Only a few special class systems provide for the supervision of mentally deficient school children after the age of compulsory school attendance, which is typically 14 to 16 years.

Under our compulsory education laws, nearly all children, normal and subnormal, attend elementary schools. We should therefore expect the schools to provide our most important information regarding the extent of mental deficiency and the most successful methods of early social control. With 95% of all the mentally deficient living in their own homes, with probably half of these of compulsory school age, and with nearly all of them having at some time attended school, it is obvious that the schools afford an exceptionally important means of dealing with the problem.

The administration of special education is undergoing some important changes. The term " special class " has long been applied to classes containing mentally deficient children. Not so long ago these were isolated classes, and contained a rather motley group of children with all sorts of handicaps and adjustment problems. In the more progressive centres these special classes are now combined in special schools, where it is possible to offer departmental types of instruction. In most places special classes are reserved for pre-adolescent children, and special schools are used for those of adolescent age.

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More recently we note a tendency to organize special education for all types of mentally, physically and socially handicapped children in single administrative departments. Thus, the White House Conference Sub-Committee on Special Education considered not only the mentally retarded, but also the blind and the partially sighted, the deaf and the hard of hearing, the crippled, those with lowered vitality, those with behaviour problems, the delinquent, the emotionally disturbed and the psychopathic. A few States provide State supervision of special classes and schools, but in most places there is only local supervision. Certification for admission to these classes is very informal.

While the original emphasis in organizing these classes was on imbeciles and morons, in actual practice the selection of children by means of mental tests has brought to these classes large numbers of unadjusted mentally subnormal children who are not true morons, and the special class authorities seem rather unwilling to separate these two types for educational purposes. Some of us believe that these borderline children are verbally deficient rather than mentally deficient, and that such children should be educated under a separate system of manual education in order to capitalize their occupational capabilities and conserve their social proficiency. The number of these mentally subnormal but not feeble-minded children is variously estimated at from 10% to 20% of the elementary school population, as contrasted with 2% of imbeciles and morons. The term "mental deficiency" for these reasons has come to include, in the United States, those mentally subnormal children who have a good prospect of ultimate social sufficiency in spite of low intelligence, and this usage must not be overlooked in evaluating our published contributions.

Our special classes usually have an enrolment of about 20 children per class. In most of them the instruction is about 80% academic education and about 20% manual and occupational training, although many authorities urge that these proportions should be reversed. However, special training in social activities, social habits, personal habits and industrial-occupational values are emphasized throughout the instruction. In some instances, as in Newark, New Jersey, the manual instruction is graded, and parallels that offered to normal children in vocational schools.

The special education of mentally deficient children in our rural districts presents a particularly difficult problem. These areas are so widely scattered and so sparsely settled that it is difficult to segregate a sufficient number of handicapped children in a given area for purposes of special instruction. Some rural communities have consolidated their school districts in union schools, which serve wide areas, with free transportation provided to and from school. Even in these consolidated schools the total number of mentally deficient pupils is still too limited to make special class segregation feasible, and the stigma of such segregation is much more serious than in urban centres.

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There is a general tendency, therefore, to favour institutional care for mentally subnormal children in rural areas because of the lack of other suitable provision, as well as because of the difficulty of providing social service for the community supervision of such children. Some rural districts have provided boarding-schools where children can reside while receiving special instruction during five days of the week, returning to their homes for the week-end. Such boarding-schools have not been widely developed.

Community Programmes.

It is evident that the majority of mentally deficient persons reside in the community. Consequently, in point of numbers, at least, and probably in point of total importance, this represents the most serious aspect of mental deficiency. In the United States we have few agencies or programmes comparable to those developed in England for this phase of social control. The majority of our State agencies are concerned with the co-ordination and supervision of State institutions. In only a few States do central boards of control have any responsibility for mental deficiency outside the field of institutional care. Most of the welfare agencies to which we might look for aid in this respect are relief or charitable organizations, which meet the problem of mental deficiency incidentally from the point of view of family relief or financial aid. Some of our States have well-developed State charity organizations, and many of our larger cities have excellent private organizations of this kind. Few of these frankly recognize mental deficiency as a special problem requiring separate attention. Even our public health agencies have no direct concern for this problem, meeting it only indirectly as it affects public health, just as the charity organizations meet the problem only as it is represented in economic stress.

Mental hygiene clinics have been extensively developed in some urban centres, and travelling clinics are available for some rural districts. Child guidance clinics, similarly, have been developed in some communities, and here and there serve rural areas near large cities. Many State hospitals for the insane and correctional institutions, as well as institutions for the mentally deficient, provide out-patient or consultation clinic services. Vocational and educational guidance clinics, as well as mental clinics, are available in many of our universities, colleges and teacher-training or normal schools.

The visiting teacher is an important aid in relation to mental deficiency in some municipalities and in a few rural areas, but this movement has been rather too expensive for development on a large scale.

Most of these agencies are concerned more with diagnosis than with treatment, and more with adjustment problems than with the treatment of simple mental deficiency. There is a distinct tendency to rely on the

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State institutions as the principal means of dealing with mental deficiency encountered in these ways.

We have very little in the way of occupation centres, boarding-homes, residential schools, social or industrial placement, follow-up and supervision. One can see particular examples of these programmes here and there throughout the United States. They demonstrate what can or should be done, but they have little influence on the problem as a whole. Only when the problem of community care is approached as systematically as has been the institutional problem shall we make satisfactory progress.

Social Types of Mental Deficiency.

Our White House Conference Sub-Committee on Mental Deficiency advocated a social classification of mental deficiency for purposes of social disposition somewhat as follows:

(1) *The low-grades.*—The members of this group are so seriously subnormal that they require aid in feeding, dressing and personal care, as well as protection from ordinary dangers. They are a burden in their families, rather than a menace to the community, and cannot well be provided for in school. They are properly institutional cases, unless the family situation is such that they can be given custodial care at home. It is desirable to relieve the family of such patients during the period when financial stress is great, or when other children in the family suffer from the embarrassment of the presence of an idiot child in the family group. The institution can give training to these children in personal habits which will make it easier for the family to resume the care of such individuals later in life.

(2) *The unadjusted high-grades.*—This class includes high-grade imbeciles and morons who are difficult to manage at home, are a nuisance or a menace in the community, are not amenable to classroom discipline in the elementary schools, and require prolonged care for purposes of stabilizing their behaviour. They are properly institutional cases because the home, the school and the community cannot control them. Some of them, during institutional residence, may receive medical treatment designed to improve their behaviour through the correction of physical abnormalities.

(3) *The physically handicapped.*—This group includes mentally deficient persons to whose condition are added serious physical handicaps which increase the social liability of low mentality. These physical defects may be so severe as to require attention similar to that for the mentally low-grade. These may be wheel-chair or bed patients who require so much help in feeding and dressing that the family should be relieved of the burden. This group may include various combined conditions, such as mental deficiency with blindness, or deafness, or wasting diseases. The claims of these patients on institutional facilities are particularly worthy.

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(4) *The aged high-grades.*—This class includes the comparatively senile or industrially incapacitated, with infirmities of age such that they cannot be cared for in their own homes and cannot be economically adjusted in the community. It is possible to care for such patients in almshouses, where the facilities are less expensive than in a training institution, and where only personal care of the aged is required.

(5) *Clinical types.*—This group includes the clinical varieties of mental deficiency, for whom suitable treatment cannot be provided satisfactorily at home or in the community. These patients have serious physical stigmata, orthopædic complications, endocrine disorders, infectious diseases, deterioration diseases, and other features which require prolonged hospitalization. It is presumed that some of these may be returned to the community after an extended period of institutional treatment or care.

(6) *Neuro-psychiatric types.* — This group includes mental deficiency associated with mental disorders such as epilepsy, psychopathy, psychosis or neuro-pathological deterioration. These, again, are properly institutional cases, since the complicating features make suitable home care or community supervision difficult or impossible. Such patients may properly be provided for in hospitals for the insane, since the associated pathological condition may be more suitably cared for there than in institutions for the mentally deficient without such disorders.

(7) *Well-adjusted young high-grades.*—This group is specially adapted for special education in the elementary schools. They require differentiated instruction and the constructive discipline of school training. Assuming that the home is economically and socially capable of caring for such children, then institutional care is usually not imperative. These children profit as well from special education in day schools as they do from similar instruction in residential schools. Moreover, they benefit from continuing to live in the community, in which they may be able to adjust economically and socially under supervision. It is important that after-care be provided when the age of compulsory schooling has been passed. This group is numerically much greater than any of the preceding groups.

(8) *Well-adjusted adult high-grades.*—This group includes those for whom community supervision under well-considered programmes of occupational placement and home care are adequate. The majority of these cases are economically self-sustaining and are not ordinarily behaviour problems. They are numerically the most important and socially the most promising of all the mentally subnormal, representing the mature ages of the last-mentioned group. They represent the great majority of the 95% not now receiving, and presumably not requiring, institutional care. The problem of reproduction is, perhaps, not so important in this group as has commonly been supposed, although presumably the majority of the hereditary mental deficients are recruited from this class.

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If mental diagnosis is supplemented by such a programme of social classification, it is possible so to divide the mentally deficient that the three principal agencies concerned outside the home, namely, the institutions, the schools, and the community welfare organizations, can receive those patients best suited to the specific type of treatment, training and protection which each of these agencies is specially prepared to offer. This means that the institutions should constantly be sorting their patients, returning to the community and the public schools those children whose plus factors have been overcome through institutional treatment. The schools, in turn, may co-ordinate with the institutions on the one hand to receive the low-grade, and the physically or socially handicapped subnormals not suited for school instruction, and may co-operate at the other extreme with community agencies, who should assume responsibility after the child leaves school. The community welfare agencies must be responsible ultimately for the principal burden in point of numbers of individuals concerned. Their programmes will be greatly simplified if the socially hopeless patients are confined in institutions.

This programme places emphasis on the residue of abilities present in every mentally deficient person, capitalizing the constructive possibilities in each case for purposes of social adjustment under as high a degree of independence as individual circumstances may make possible.

Community supervision in rural districts presents a particularly difficult problem, because of the distances to be covered in relation to the small number of individuals served. A few of our rural counties have well-developed programmes of social service but, as in the cities, most of these are confined to charitable relief. These rural organizations do, however, provide some public health service, and serve to co-ordinate all types of public agencies for relief for the mentally, physically and socially handicapped.

In controlling the social problem of mental deficiency in the community, there is some discussion in the United States of providing social supervision through the public health service. It has been suggested that the public health nurse could act in the same rôle as the visiting teacher in assisting subnormal families with hereditary mental deficiency. The problems of sexual promiscuity, unsanitary living conditions, child neglect, malnutrition, and so on, which are so evident in such families, suggest that the resources of the public health service might be brought to bear constructively, and that for this purpose the public health nurse might provide social supervision of a higher type than is obtained under the police supervision which is often otherwise necessary. This is particularly true in our rural districts, where medical and public health service is concentrated in county hospitals, to which are usually attached one or more public health nurses. These nurses would provide the necessary medium for correlating the institutional and school facilities of the State on the one hand with welfare and relief organizations on the other.

We must not overlook the fact that large numbers of mentally deficient

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persons are now being cared for in good homes, where the family is able and willing to provide the necessary care and supervision. These homes are entitled to the assistance which can be provided through institutional, school, and community welfare organizations. The mental hygiene problem in a family containing a mentally deficient member must not be forgotten.

No statement on community control of mental deficiency is complete without touching on the problem of sterilization. I have avoided specific mention of this topic because of its controversial nature. Apparently we, in the United States, are much more optimistic regarding the possibilities in that direction than is the case in England. The success of the sterilization programme in California is an example of what can be done, but public opinion elsewhere does not yet permit much action. The California experiment has demonstrated quite satisfactorily that sterilization of mental defectives is not followed by sexual promiscuity, and that it does make possible the restoration, to the family or to the community, of many individuals where the sex factor is of prime importance. The trend of authoritative opinion in the United States favours a policy of selective sterilization, with temporary commitment to institutions for this specific purpose. We are fairly well provided with legislative approval, but public opinion is not yet favourable to the point where sterilization is a practicable measure. It is significant that the sterilization programme in California has promoted a correlated programme of community follow-up and supervision.

The problem of sterilization has been viewed by some of us in relation to the relative menace of the sexes. While sterilization is surgically simpler in the male, it seems socially more important in the female. It can be said with some assurance that mentally deficient males mate but seldom with mentally normal females, whereas mentally deficient females mate with both normal and subnormal males. This tendency of the woman to mate upward in the social scale serves to spread mental deficiency into families of good heredity, thereby propagating so-called simplex inheritance.

This problem must be viewed also in its social as well as in its biological aspects. The mentally deficient mother provides not only a poor biological heredity, but also a poor maternal and social environment. The inferior social heredity in families of poor stock may be, therefore, almost as important as the inferior biological heredity.

Research.

Perhaps the most outstanding development in the United States is the emphasis on research. The scientific study of mental deficiency has been developed to a fairly high degree, and the results of such research have been widely capitalized for administrative, educational and treatment purposes. It is unfortunate that there is no satisfactory medium of exchange for making these research studies available to other countries. The proceedings of the

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American Association for the Study of the Feeble-Minded (now the American Association on Mental Deficiency) is the most important single repository of these scientific studies, but our many journals in the fields of medicine, psychology, education and sociology contain an extensive and reliable body of observation, experience and investigation, from which it is to be expected still more important developments will accrue.

In conclusion, I can only repeat that the community control of mental deficiency in the United States has not had the extensive development that is apparently the case in England. It is because of this very situation that I have come to England for help. I am hoping that, from my contacts with the professional personnel devoted to this problem in this country, and from my observations at centres where work of this kind is being done, I may carry back to the United States helpful suggestions which will assist us in developing a more constructive programme.

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THE INTERACTION OF HEREDITY AND ENVIRONMENT.*

By LANCELOT HOGBEN, M.A., D.Sc.,

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IN the world of science it is generally found that virile opinions are those which are fortified with a rather effeminate equipment of evidence. One of the subjects of which this is true is mental inheritance. In early days it was simple and attractive to place the blame for the occurrence of mental disorders on heredity. It is now becoming apparent that preventive policies based on genetic principles divorced from exact scientific knowledge of human inheritance are no more likely to succeed, than curative efforts unfortified by a scientific understanding of the environment. Mental inheritance is not a problem of genetics alone ; it demands all that the geneticist can contribute to the recognition of how the characteristics of an organism are influenced by those of its ancestors ; it calls for all that the nerve physiologist can impart about the way in which the characteristics of an organism are influenced by the changing pattern of stimuli to which it is subject.

The advance of science depends as much on learning the technique of asking questions in the right way as upon inventing devices for solving them. It has taken scientists a long while to outgrow the confusion between legal inheritance and biological inheritance. When Darwin wrote the *Origin of Species* the phenomena of fertilization had not been fully elucidated. Biologists still believed that people hand on their noses to their offspring in much the same way as they hand on their bank balances. Even now there are biologists of an older generation who find the prospect of a 100% death duty equally repugnant, whether it is applied to their bank balances or their noses. Weismann performed a great service to biology by pointing out that the state of death claims all our accumulated anatomical earnings. Our parents do not endow us with characters. They endow us with *genes*. The genes cannot carry their cheque-books into the next life. Weismann has been amply justified by all subsequent work in challenging the belief that the genes have any sympathetic interest in the way we use the organs we owe to them. Unfortunately, Weismann and his disciples laid too little emphasis on the fact that our genes cannot make bricks without straw. The individual differences

* Read at the Annual Meeting of the Royal Medico-Psychological Association at Colchester, July 6, 1933. The greater part of this paper is incorporated in the author's book *Nature and Nurture* (in the press).

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which men and women display are partly due to the fact that they receive different genes from their parents, and partly due to the fact that the same genes live in different houses.

A large body of data dealing with the influence both of nature and of nurture has accumulated since Mendel, Darwin, Weismann, Galton and their generation first discussed these questions. We are able to define what we mean by differences due to genes and differences due to environment with greater precision. That means that we can state in what situations such differences can be distinguished. Before we can ask the right sort of questions about the inheritance of diseases, or, to be more exact, the inheritance of gene differences which affect the liability to contract a disease, we must pause to clarify this distinction with examples from animal genetics.

If chickens are fed on yellow corn or given green food, we can distinguish between some varieties which breed true for yellow shanks and others which breed true for colourless shanks. This is a *genetic difference*. Crosses between such varieties, when all the progeny are fed on yellow corn or given green food, yield numerical ratios of the two types in conformity with Mendel's principle. If chicks of the variety with yellow shanks are fed exclusively on white corn they grow up with colourless shanks. The difference between a fowl of the yellow variety fed on yellow corn and a fowl of the same variety fed on white corn is *a difference due to environment*. If we crossed fowls of the yellow variety with fowls of other varieties, giving some of the progeny yellow corn and others white corn, we could not expect to obtain constant numerical ratios, such as Mendel's principle predicts. If two poultry farms, both using yellow corn for food, specialized respectively on birds with black plumage and yellow shanks and birds with barred plumage and white shanks, we should call both differences genetic differences. If both farms decided to use white corn, we should only be able to recognize the plumage difference as a genetic difference. If both farms varied their procedure quite promiscuously, we should not be able to tell whether the difference between one bird with yellow shanks and another bird with colourless shanks was a genetic difference or a difference due to environment.

Another illustration may help to make the distinction quite clear. Some rabbits deposit yellow fat when fed on green-stuffs. Most rabbits have white fat, whether given greens with their food or not. Yellow fat is a serious carcase defect from a commercial point of view, because purchasers object to it. Rabbits which have white fat when fed on green food possess a liver enzyme which breaks down xanthophyll, thus preventing it from reaching the fat deposits. Rabbits which deposit yellow fat lack this enzyme. Michael Pease has shown that when rabbits of both kinds are crossed and back-crossed, the absence of the enzyme behaves like an ordinary " recessive character ". It is only recognizable as such if the rabbits are given green food containing the yellow pigment. In a group of rabbits of both types we can recognize the

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gene difference by giving them all green food. In that case the biological environment is *neutral* in Prof. Levy's sense,* and the gene difference is the *isolate* which we are investigating. If we have a group of rabbits none of which possess the enzyme which breaks down xanthophyll, we can make their fat white by feeding them on mash and potatoes, or yellow by feeding them on mash and cabbage. In that case the genetic constitution is neutral, and the biological environment is the isolate of the investigation. The practical breeder has two remedies from which to choose. He may put the blame upon the biological environment and cut off the supply of green food. He may put the blame upon heredity and breed for white fat.

In some situations the doctor can put the blame on heredity and in others upon environment for the manifestation of one and the same clinical phenomenon. An exact biological parallel to a small class included under the general term *amentia* illustrates this very clearly. Clinical writers sometimes distinguish between *sporadic* and *endemic* cretinism. In the same way we may distinguish between *genetic* and *ecological* neoteny in Amphibia. Cretinism is due to an insufficient quantity of the iodine compound manufactured by the thyroid gland. Insufficiency of the same hormone in Amphibia prevents the aquatic tadpole from transforming into the terrestrial adult. This may be because the thyroid gland is incapable of doing its proper work. Even if it can do so, it cannot make thyroxine without iodine. So if tadpoles are kept in water with no trace of iodine, and fed upon a diet free of iodine compounds, they fail to transform into frogs. The European newt normally completes its development and breeds in the adult form. In certain mountainous districts, where *endemic* cretinism is reported among human beings, the newts commonly fail to undergo metamorphosis, or do so after great delay. This is probably because the iodine content of the waters in which they live is low. A similar explanation does not apply to a local race of the American newt (*Amblystoma tigrinum*) in the neighbourhood of Mexico City. Individuals belonging to this race never grow up ; they breed from generation to generation in the aquatic form. They will grow into the terrestrial newt if fed on thyroid gland. They will not do so if given iodine compounds. They possess a thyroid gland which does not release its secretion into the circulation. Failure to undergo metamorphosis in the presence of sufficient iodine sometimes occurs *sporadically* in the Colorado variety among individuals living side by side with others which complete their development. The Mexican variety breeds true for its inability to undergo metamorphosis when kept in aquaria with access to an abundance of iodine compounds.

Lack of thyroid secretion in the maternal circulation may be compared with keeping tadpoles in a tank with iodine-free water and food containing no iodine compounds. In the discussion of mental inheritance the term *environment* is sometimes equated to training, and even to training at so late a stage

* H. Levy, *The Universe of Science.*

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as when school education begins. This is very misleading. Indeed, the fact that a condition is congenital provides no presumptive evidence for the view that environment is of little ætiological significance. If it is recorded in one member of a pair of fraternal twins and not in the other, we have some presumptive evidence that genetic differences are also important, and may be of paramount importance in producing a congenital disorder. In the absence of such evidence, the fact that a disease is congenital is equally compatible with the belief that genetic differences account for its occurrence, that it is determined by idiosyncrasies of the uterine environment, or that both these agencies play their part in its manifestation. Several classes of facts point to the importance of exploring the influence of the uterine environment upon the characteristics of individuals. One is the high incidence of certain conditions among first-born children. Another is the high incidence of various malformations among offspring of women approaching the end of the child-bearing period.*

The first example given to illustrate the meaning of a genetic difference drew attention to a distinction which is of fundamental importance both for the theory and practice of clinical genetics. In contrasting variations in plumage colour with the colour of the shanks, we are not separating a class of phenomena to which the Mendelian principle applies from a class of phenomena to which it does not apply. We are distinguishing between phenomena which are easy to study and phenomena which demand more care in controlling the environment. There is no hard-and-fast line between the two. Genetic differences which distinguish plumage colour in fowls are recognizable over a very wide range of environment. This does not mean that they are just as big in every environment which human ingenuity can devise. The difference between the pure black plumage of the Langshan and the mottled plumage of the Light Sussex is a genetic difference. By thyroid feeding, the extent of the black areas in the Light Sussex can be very considerably extended.

We thus see that no statement about a genetic difference has any scientific meaning unless it includes or implies a specification of the environment in which it manifests itself in a particular manner. Characteristics of organisms are the result of interaction between a certain genetic equipment inherent in the fertilized egg, and a certain configuration of extrinsic agencies, which include the conditions of life in the uterus and the external environment in which social existence is carried on. Differences between individuals may arise from differences in the kind of genes present in the fertilized egg and from differences in the uterine or post-natal environment. Differences of the first kind, that is to say, differences due to a different equipment of genes, may be of two types: (1) Differences which are recognizable in almost any environment in which the fertilized egg will develop and continue to grow; and (2) differences

* *E.g.*, Anencephaly.

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which are only manifest within a fairly restricted range of environment. Examples of the first type are the difference between a hæmophiliac and an adult whose blood coagulates in the normal way, or between an amaurotic family idiot and an ordinary infant. Clinical examples of the second type are less easy to cite because they are less easy to detect. That does not mean that they are less numerous. Probably the best case is Mongolism. Whatever gene differences are involved in the appearance of this condition appear to require a special pre-natal environment to make them recognizable.

The distinction between the two classes is of the utmost importance from a preventive point of view. In the first case we can readily determine the type of transmission involved. On the basis of Prof. J. B. S. Haldane's analysis of genetic selection, we can predict with some confidence the rate at which affected individuals can then be eliminated by any type of interference with parenthood. In the second case, it is more difficult to determine the method of transmission. Unless affected individuals are extremely rare, it is generally impossible to do so until we can specify with some precision the kind of environment in which they are recognizable. So we cannot give a certain answer to the question : What would be the result of selective interference with parenthood? Usually we could deal with the matter without recourse to selection, if we had the kind of knowledge which enables us to say how much effect selection would achieve. For instance, we know sufficient to-day about the way in which people get cholera to study the genetic factors involved in susceptibility to the disease among a group of individuals equally exposed to the danger of contracting it. The fact that we have the knowledge to study the problem is the reason why it is of no practical importance to do so. To understand the environmental situation is to be able to control it.

We may express the same truth in another way. When we understand the *modus operandi* of the gene, we can state the kind of knowledge we need in order to control the conditions in which its presence will be recognized. The pioneers of the evolutionary theory, being preoccupied with the shapes of animals, handed on the same obsession to the earlier geneticists. Out of it grew the belief that selection is the only remedy when once we have put the blame upon heredity. Though we still believe that selection has its uses in preventive medicine, biologists are becoming less disposed towards the ultra-Calvinistic attitude of Galton and his disciples. This is because the geneticist has begun to deal with the gene as a reagent in the process of development. The study of gene differences is becoming part of the dynamics of the organism. If, without further analysis, we are content to endow a recessive gene with the property of making urine black, the outlook for the individual patient is also black.* Selection is, then, the only remedy for alcaptonuria. If we envisage its allelomorph as the precursor of an enzyme which completes the breakdown of the non-nitrogenous moiety of tyrosine metabolism, we discern alternative

* Assuming that alcaptonuria is an æsthetic disability.

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possibilities. Biochemical discovery may one day make the missing ingredient available for individual use. Recent work on œstrin therapy for hæmophilia shows that such a possibility is not an idle dream.

A variety of domestic fowl known as the Frizzle* has defective plumage. Frizzle crossbreds are characterized by curling of the feathers upwards and outwards. The pure-bred Frizzle remains practically bare throughout its first year of life, appearing to be in a state of perpetual moulting. It is extremely delicate and difficult to rear. When newly hatched, the down feathering is fragile and breaks off. The exposure of the skin so produced leads to a great loss of bodily heat from the surface, calling forth increased basal metabolism, increased heat production, increased heart-rate, lack of fat deposits, and diminished hæmoglobin content of the blood. Landauer and his co-workers, who have studied the genetic physiology of this breed, have shown that the pure Frizzle chick will develop within three weeks a complete plumage over the whole body if protected from heat loss by enclosure in a woollen jacket and confined to a warm room. Thus knowledge of the way in which a single dominant gene substitution produces its deleterious manifestations teaches us how to prevent their appearance.

Investigations into the rôle of the gene in the process of development have emphasized two important conclusions, besides the need for defining the kind of environment in which a given gene substitution manifests itself in a particular way. The first, illustrated by the foregoing example, is that one and the same gene substitution may be responsible for many and varied manifestations, depending upon the kind of environment in which development occurs. In *Drosophila* one gene is predominantly effective in the production of eye colour but has an accessory effect upon the wings. Another influences the number of bristles, but has measurable effects upon at least a dozen other characteristics to a less noticeable extent. For convenience we usually define a gene substitution by the most striking effect which it produces in some specified environment, or by the single effect which it produces in the widest range of environment in which its effects can be recognized. A second important conclusion is that the effect of a gene substitution depends on all the other genes with which it is combined. An example from the pathology of fishes will illustrate this.

Reed and Gordon† have recently made a study of intergeneric crosses between different varieties of two kinds of fish kept for ornament in aquaria. Their popular name is the Mexican killifish. Varieties of *Platypœcilus* differ in possessing large black pigment-cells, small black pigment-cells or no black pigment-cells at all. In interspecific crosses, the occurrence of the two kinds of black pigment-cells can be shown to depend respectively upon a sex-linked and an autosomal dominant gene substitution. Crosses between the genus

* Benedict, Landauer and Fox (1932), "The Physiology of Normal and Frizzle Fowl", *Storrs Agricultural Experiment Station Bulletin* 177.

† Reed and Gordon (1931), "The Hereditary Basis of Melanosis in Hybrid Fishes", *Amer. Journ. Cancer*, xv.

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Xiphophorus and varieties of *Platypœcilus* having large black pigment-cells result in the production of offspring with tumours. Thus a gene substitution of which the effect is merely ornamental and, as such, of commercial value, when accompanied by one combination of genes, is definitely pathological in its effect in the presence of another.

We are now in a position to see what sort of questions we can intelligibly ask about the rôle of heredity in disease. We can ask whether liability to suffer from any particular disease is associated with gene differences. We can ask whether such gene differences are of the kind which would be apparent throughout a range of environment as great as that to which members of the same fraternity, stock or social group are exposed. We now possess methods which enable us to detect gene differences which are recognizable throughout a wide range of human environment and differences which are not.

When the human geneticist is confronted with a discontinuous character which only manifests itself in special circumstances, one line of attack is to find out everything he can about the circumstances which control its appearance. An excellent example of a combination of clinical and genetical method is provided by a recent investigation of Dr. Lionel Penrose* in the Royal Eastern Counties Institution. Dr. Penrose investigated the familial incidence of mongolian idiocy. It is well known that this type of amentia occurs most commonly among children of mothers who have nearly reached the limit of the child-bearing period. If we take all fraternities in which a mongol occurs, we rarely find more than one mongol in each. Indeed, mongolism would not be classified as a familial condition in the ordinary sense. Among partial fraternities of children born when their mothers are advanced in years, Dr. Penrose found that the condition has a significant familial incidence, and carried his inquiry a stage further. This will be understood better with the help of an illustration from animal genetics.

There is a mutant of the fruit-fly which is deformed in the hindmost part of the body. It is usually referred to as " abnormal abdomen ". Flies of the pure mutant stock regularly exhibit the deformity when grown in moist cultures. They are perfectly normal when grown in a dried-up culture. So long as the experiments are carried out in moist cultures, matings with wild-type stock yield numerical ratios in keeping with the supposition that the difference between the mutant stock and the wild type is due to a single gene substitution. If the cultures are allowed to dry, no consistent numerical results can be obtained, for an obvious reason. Had the geneticist no means of preventing his cultures from drying up he would have to confine his counts to larvæ which hatch out while the culture is still moist. This, in effect, was what Dr. Penrose did with his mongols, the only difference being that in this case the culture is dry to begin with, and becomes moist as time goes on. He found that when

* Penrose (1932), "On the Interaction of Heredity and Environment in the Study of Human Genetics, with Special Reference to Mongolian Idiocy," *Journ. Genetics*, vol. xxv.

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he made allowance for the fact that mongols are more likely than normal children to die before birth, the incidence of mongols in fraternities with mothers over forty years of age corresponds to a theoretical 1 : 3 ratio.

This investigation illustrates the value of close co-operation between the geneticist on the one hand, and the clinician or the physiologist, who is studying the influence of the environment directly, on the other. The work of Dr. Penrose upon mongolism shows that a fuller understanding of the genetic aspect of mental diseases does not always lead us to the conclusion that selection is the most effective way of eliminating them. Of other types of amentia our knowledge is much less definite. The large class of cases called " simple primary amentia " is only simple in the sense that the people who are put in it are simple. The fact that simple primary amentia may be regarded as an arbitrary segment cut off the tail of a normal distribution of intelligence, suggests that it is to be regarded as an extremely complex class of genetical entities. This does not preclude the possibility that there may exist within such a class an extreme group of variants in which the deviation from the norm may be attributed predominantly to a simple gene complex. It is highly probable that a vast number of genes play their part in determining differences in human stature. Also it is not improbable that ateleiotic dwarfs are differentiated from the general population by the possession of two particular dominant genes. The possible existence of a unitary class of low-grade cases of amentia is indicated by a recent study of Sjögren.

Simple primary amentia is a sociological rather than a clinical category. Social behaviour depends upon a long process of training which does not begin until physical differentiation is almost complete. Even the grosser abnormalities described under the general terms " mental defects " are not always recognizable till several years after birth. Consequently there is need to exercise great care in deciding how far the manifestation of genes involved in such conditions depends upon factors of early development. Another difficulty in the study of social behaviour from the genetical standpoint resides in the lack of precise and reliable standards for describing social behaviour within the range of what we regard as normal. A beginning has been made with the intelligence tests of Binet, Terman, Burt, Spearman and others. When people apply the word " intelligent " to a person, they do not mean something as definite as black, freckled, or intoxicated. Can any useful meaning be attached to the word as a description of the characteristics of human beings ? The only way of answering this question is to let different observers arrange a group of individuals in a scale of what they call greater or less intelligence, and to see whether it is possible to devise some independent test by which the same group can be arranged in a way which corresponds fairly closely with independent estimates based on personal impressions. This is what an intelligence test does.

The most definite conclusion which has yet been reached is this:* The

* Herrmann and Hogben (1933), "The Intellectual Resemblance of Twins", *Proc. Roy. Soc. Edin.*, vol. liii.

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average difference between the intelligence quotients of members of the same fraternity is reduced by less than half when all gene differences which differentiate offspring of the same parents from one another are eliminated. This conclusion is accredited by the independent testimony of three groups of investigators: Holzinger and Tallman in America, and Herrman working in the writer's department in this country. It is based on the examination of more than two hundred twins of each type. Its importance is not yet fully recognized. Because differences in the intelligence quotient are affected very little by school environment, many writers have given, and still give, support to the view that differences of this kind are a reliable index of inborn endowment. Assertions of this kind overlook the significance of the uterine environment and the period of social training before intelligence tests can be applied.

Between birth and the age at which formal education begins there exists a protracted and, it may be, highly significant period during which differences of social environment may affect the behaviour of an individual. Hence the comparative constancy of a psychological index, such as the intelligence quotient, between four and fourteen years of age offers no presupposition in favour of the view that it measures a characteristic which is little affected by differences in the family environment. While relying too largely on introspective methods and concepts of questionable validity, the Freudian school has performed a service to human biology by focusing attention on the importance of the social environment during the years when the basic patterns of conditioned behaviour are established. In the light of the new evidence derived from the study of twins, no conclusions about inborn differences based on comparisons of different occupational and racial groups have any scientific validity. Likewise the fact that simple primary amentia has now been defined in terms of an intelligence test scale is no reason for discouraging research into the ætiological significance of the uterine environment, or influences operating in early childhood.

The normal distribution of intelligence test scores in a population makes it impossible to attribute the large class of simple primary amentia to any single or simple form of hereditary transmission. This is borne out by other considerations. Pedigrees in which "simple" primary amentia regularly reappears as a *dominant* condition in successive generations are the exception rather than the rule. It is also true that a high familial incidence is not common. If a condition is determined by a single recessive gene substitution, it will generally manifest itself among several sibs, because the probability that an individual will be recessive if one of his sibs is recessive is a quarter. So if simple primary amentia is a single clinical entity, its appearance is either determined by several genes, or by a single gene substitution which only manifests itself in a special kind of environment not necessarily common to all members of a fraternity. It is highly unlikely that the arbitrary delimitation of a subcultural group with an I.Q. below 75 and no special clinical peculiarities defines one and the same biological phenomenon. It is not impossible that such a group does contain

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classes of individuals whose deviation from the standard is mainly due to a single recessive gene substitution. In a recent investigation, Dr. Penrose* has made use of an application of the modern theory of consanguineous parentage to test this possibility.

If such a class of individuals exists, we are entitled to conclude that they make an unduly large contribution to that section of the mentally defective population derived from consanguineous unions. This would imply that the presence of several affected members in the same fraternity would occur more commonly in fraternities with consanguineous parents than in fraternities with unrelated parents. Dr. Penrose found that this is conspicuously true. Indeed, the familial incidence of mental defect in a group of fraternities with at least one defective sib having parents who were first cousins was in close agreement with the figure predicted. Analysis of this kind shows how it is possible to take the hotly contested problem of mental defect out of the realm of partisanship. As with diseases of the body, so with mental diseases, different mutations and different kinds of environment may, in different situations, be chiefly responsible for what is described as one and the same clinical entity. Mental disease is not a single genetic problem. It is not a genetic problem alone. The study of how gene differences in one environment contribute to mental disorders does not preclude the study of other kinds of environment in which such differences would not be detected. The fact that such differences might be slowly eliminated by genetic control is quite consistent with the possibility that mental defect will eventually yield to curative treatment.

When we are studying animals in the laboratory we can arrange the conditions of an experiment so as to isolate gene differences or differences due to environment for separate treatment. Using a highly inbred stock of rats, we can examine the way in which body-weight varies with the vitamin content of the food, or whether tumours are formed when the skin is treated with pentacyclic hydrocarbons. Keeping all our rats on the same diet, we can separate pure lines with different growth-rates and greater or less resistance to tumours by selection from a heterogeneous stock. With human populations the unaided investigator cannot do this sort of thing.† We can recognize the kind of gene differences which manifest themselves over a wide range of environment. We can test the applicability of certain algebraical predictions which show us that gene differences affect the variability of highly modifiable characteristics. If, having done so, we speak of heredity or environment as more or less *important* in connection with any differences between human beings, our criterion of importance is relative to the historic environment in which the differences themselves are measured. Two hundred years ago the majority of Englishmen ran the risk of smallpox infection. No doubt gene differences played a large part in deciding whether a particular Englishman succumbed to the disease

* Private communication to the writer.

† Curiously enough, eugenists who profess to be interested in promoting knowledge about human inheritance bitterly oppose social reforms directed to equalize the human environment.

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or escaped. No biologist or clinician would argue that gene differences provide the main reason why modern Englishmen are less likely to get smallpox than their great-grandfathers, or than Esquimaux communities at the present day.

That biologists do not always give the same answer to questions about heredity and disease is partly due to the fact that questions framed in everyday speech involve an ambiguity which arises from the changing nature of the human environment. If we ask, Is amaurotic idiocy associated with a gene difference which manifests its presence throughout the whole range of conditions to which members of the same fraternity are normally exposed?, we can expect a biological answer. No biologist who is conversant with the facts will hesitate to answer the question in the affirmative. Few sensible people who know the answer would encourage a married couple who had produced a child with the disease to have more children. If we ask, Is simple primary amentia inherited? many biologists will answer in the affirmative. They will not do so because we possess precise knowledge about the gene differences which affect feeble-mindedness of the same definite and unequivocal kind as our knowledge about amaurotic idiocy. They will interpret the question in a sociological sense, and give it what is implicitly a sociological answer. The answer conceals the assumption that if we cannot control the environment we ought to take no chances with the hereditary aspect of the problem. This is not unreasonable so long as there is no disposition to underrate the likelihood of discovering how to control the environment. In the course of millennia it is not unlikely that European communities could evolve a high degree of immunity to smallpox through uncontrolled selective elimination of the less resistant. The African peoples have possibly evolved their high immunity to malaria in this way. Thanks to human inventiveness, we have not had to wait several millennia to get rid of smallpox.

Of late years the discussion of preventive applications of genetic theory has been largely focused upon the problem of mental defect. There is no doubt about the concentration of mental defect of one kind or another in certain inbred stocks, and such concentration is not likely to be due entirely to the family environment. If it were, most members of a fraternity would be alike. On the other hand, the fact that the family is a unit of social and physical environment, and that the ancestry of a human being is a complex of genealogical and environmental relationships, is entirely consistent with the view that genetic differences manifest in such pedigrees would not necessarily manifest themselves in other situations. On this matter biologists are of two persuasions. One school holds that the genetic difference is all-important, and that the correlation of a particular inheritance with a depressed standard of life is due to social selection. The other school holds that a depressed standard of social and physical life is especially propitious to the exhibition of gene differences which might not otherwise be recognizable. A danger of over-emphasizing the genetic aspect of mental defect in the present state of knowledge is that it will discourage research into the rôle of the environment.

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To do so would deprive the human geneticist of information which is essential in making a confident estimate of what selection can achieve.

That we cannot point to any factors in the environment responsible for a disease or defect does not necessarily mean that it is associated with gene differences which manifest themselves throughout a wide range of environment, or that selection is a very effective preventive measure. The effectiveness of selection depends on the kind of transmission involved. Dominant genes are eliminated very effectively by selection. Recessive genes when rare are eliminated very slowly by the most vigorous selection, unless they are borne on the X-chromosome. More knowledge of the part played by the uterine environment in determining mental defect can help us to unravel the way in which gene differences associated with mental defect are transmitted. The fact that heredity is the culprit in one framework of environment is fully consistent with the possibility of discovering a complete cure in another. Heredity has condemned the Mexican salamander to lifelong cretinism. In dealing with land situations, one might say that it has a mental age of one month. A single meal of ox thyroid suffices to induce it to complete its full development into the typical land salamander in six weeks. In that condition it may live for years. No one acquainted with the facts can doubt that genetic factors play some part in the ætiology of cancer. Neither do many people declaim with indignation against the expenditure of large sums upon cancer research, when such research is largely directed to display relevant environmental agencies, such as pentacyclic hydrocarbons.* The division of diseases into two groups, mental diseases which are mainly due to heredity and bodily diseases which are mainly due to environment, is partly a legacy of an earlier phase in the history of genetic science, and partly a survival from the period when the study of the central nervous system belonged to the province of moral philosophy.

It is clearly desirable to study the genetic aspect of feeble-mindedness and to make the best of all the knowledge we gain. At the same time there is no occasion to magnify its importance till it assumes menacing dimensions. It can be maintained with some reason that it would be wiser to prevent the feeble-minded from propagating in the meantime, because they are obviously unsuitable parents from an educational point of view. A rationally planned society might easily be persuaded to take this course. The sympathy with which such proposals are at present greeted by some students of social problems is not enhanced by the fact that they are almost invariably put forward by those who are most anxious to perpetuate forms of parasitism more costly and disastrous than feeble-mindedness. To the writer, it seems that the selfishness, apathy and prejudice which prevent intellectually-gifted people from understanding the character of the present crisis in civilization, are a far greater menace to the survival of culture than the prevalence of mental defect in the technical sense of the term.

* Cook, Hieger, Kennaway and Mayneford (1932), *Proc. Roy. Soc.*, B, cxi.

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JUVENILE TYPES OF GENERAL PARALYSIS.*

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IN contrast with the vast literature devoted to the adult type, reports on the form of general paralysis which occurs in childhood or adolescence have been few and far between, and in this country the papers of Mott (1) and Watson (2) form the chief source of our knowledge of its clinical and pathological features.

Since in many cases the mental symptoms are those of a progressive dementia imposed on a mind which has shown an imperfect development from the earliest years of life; the juvenile type has claims on the attention of both the psychiatrist and the student of mental deficiency, and offers numerous problems for discussion and investigation.

We owe the original description of juvenile general paralysis to Clouston (3), who in 1877 gave an account of a boy, æt. 16, whose physical and mental signs were those of a progressive dementia. He suggested that both clinically and pathologically the disease was the same, both in the adult and juvenile forms—a view which, as we shall see, requires some qualification in the light of recent research.

Since this date, and particularly since the advent of the Wassermann reaction, cases have been reported with increasing frequency, and to-day the literature contains references to more than 600 cases.

Statistics concerning its incidence are not easily obtained in this country, save in the mental hospital returns, and owing to the increasing tendency of general and neurological hospitals to undertake the treatment of all forms of neuro-syphilis, figures from mental hospitals are apt to be misleading. In a recent survey of 50 cases of congenital neuro-syphilis attending the National Hospital during a period of ten years, Ferguson and Macdonald Critchley (4) found that 16 cases, or 32%, were examples of juvenile general paralysis, and 6 more, or 12%, examples of juvenile tabo-paresis. Its incidence, therefore, varies considerably in different types of hospital, but it will probably not be an over-estimation to say that about 1% of all cases of congenital syphilis develop general paralysis.

* Read at the Annual Meeting of the Royal Medico-Psychological Association at Colchester, July 6, 1933.

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Age at onset.—The first symptoms often develop so insidiously that it may be quite impossible to fix the date of onset, and this difficulty is increased if, as is so often the case, the patient has been mentally defective from birth. Furthermore, there may be a history of early focal signs—localized paralysis of cranial nerves, hemiplegia and so on, which suggests that the early symptoms were those of an involvement of the covering and supporting tissues of the brain rather than of the parenchymatous elements, or, in other words, that the patient suffered at first from meningo-vascular syphilis, and in later years developed parenchymatous syphilis. It is therefore unwise to assume that the early development of some localized paralysis is a reliable indication of the onset of progressive paralysis.

Certain writers have suggested that the disease is present at birth, and that this type should, therefore, be termed "congenital general paralysis". In America, Menninger (5), in a study of 40 cases, found 5 which he thought dated from birth, and Klauder and Solomon (6) refer to a patient who showed symptoms of general paralysis at the age of 3 years. For determining the date of origin of such cases the authors have been content to rely on the histories, and in the absence of details of physical signs, I do not think they can be said to have established the existence of cases of congenital general paralysis. As a general rule it may be said that the age of onset is somewhere between the tenth and sixteenth years.

Sex.—In marked contrast with the sex-incidence of the adult type with its ratio of one female to four males, both sexes suffer about equally from the juvenile form.

Duration.—On the whole, the clinical course exceeds that of the adult type; cases with a duration of ten or more years are not very uncommon. Thus, in my series one patient with optic atrophy lasted eleven years, and Menninger refers to a case admitted to Manhattan State Hospital when 17 years of age, who at the age of 34 was still active. From the point of view of duration the early appearance of epileptic convulsions is an unfavourable sign. On the other hand, cases arising in early childhood generally last longer than those appearing in adolescence.

Physical Signs.

Stigmata of congenital syphilis.—Signs of congenital syphilis may or may not be present, and in my experience cases with typical syphilitic facies are not common. In Klauder and Solomon's series of 23 cases, stigmata of congenital syphilis were noted to be present in five, and in the Leavesden series, 14 in number, stigmata were found in five instances. It is important to note, however, that while the patients themselves may be normal in appearance, other siblings may exhibit classical stigmata of congenital syphilis—a point to which I shall refer later.

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Ductless Glands.

Evidence of endocrine disturbance is often to be found, and infantile sexual development is extremely common. In addition to the dwarfed stature and the puny development which is so common in congenital syphilis, examples of infantilism may be seen. The majority of these belong either to the Fröhlich or to the Lorain type.

Neurological Signs.

For the most part, the neurological signs resemble those of the adult paretic. Foremost among the motor signs are pupillary changes. Irregularity and inequality of the pupils, mydriasis and, less commonly, miosis may be encountered. In fact, all the variations common to neurosyphilis may be found, but the Argyll Robertson pupil is less commonly seen than in the adult type, the pupils more often failing to react both to light and on accommodation. Exceptionally, as in one of my cases, who received malarial therapy, the pupils may be normal. Another distinguishing feature in this type is frequency of optic atrophy in conjunction with other signs of tabes. The incidence of tabo-paresis is greater in juveniles than in adults, but for some reason yet to be explained, lightning pains and gastric crises do not form part of the tabetic picture in the young subject. Ataxia, manifested by inco-ordinate movements of the upper limbs and clumsiness in walking, is one of the earliest motor signs, and one to which I would call particular attention, for I believe it to be more often an indication of cerebellar degeneration than of involvement of the posterior columns of the cord. Lingual, labial and facial tremor may be encountered, but these are seldom seen early in the clinical course. On the other hand, convulsions of an epileptic character are very common, and may precede the development of other somatic symptoms by months, or even years. In the later stages of the disease, gross choreiform movements and persistent grinding of the teeth are to be looked for. At the stage when the patient becomes bed-ridden, contractures soon develop along with a progressive emaciation.

Mental symptoms.—According to how the mental symptoms develop, it is possible to divide cases into two groups. In the first, and in my experience the more common group, the patient has been mentally defective from birth until the onset of a simple, progressive and profound dementia which, running a rapid course, soon removes what little intelligence there may have been. To the second group belong those cases in whom mental development has for some years proceeded in a perfectly normal way with no evidence of retardation, some patients indeed being precociously bright. In my series of 14 cases, 8 belonged to the first group and 6 to the second group.

To a less extent the two groups can be distinguished by their physical characteristics. The patient who has shown no mental abnormality in childhood may be of normal stature and physique. The juvenile general paretic

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who has been feeble-minded from birth is invariably physically undeveloped as a whole, with a cranial circumference several inches below that of the normal child of similar age.

The mental changes occurring in patients of the first group are, naturally, seldom very striking. If the patient be an idiot, as was the case in one of my patients, there are no new mental symptoms to be studied ; if an imbecile, his imbecility slowly deepens into idiocy ; his failure of attention, his indifference to his environment become more pronounced, and there is often a motor restlessness which finds an outlet in persistent acts of destruction. It is in this type of case that the greatest difficulty arises in fixing the date of onset, as in nearly all cases the clinical picture of simple amentia changes almost imperceptibly.

In the second type, in which a progressive dementia supervenes on an apparently normal mental development, the psychical disturbances are not unlike those of the adult form, and the later their onset, the more nearly does the case resemble the picture of adult general paralysis. Moroseness, bad temper, irritability, silliness and loss of interest are among the earliest indications of change in character and intelligence. The patient ceases to apply himself to his lessons, and failure of memory and emotional instability are prominent in the clinical picture ; there is, however, seldom the euphoria which the adult general paretic may so vividly portray, and because of the narrow mental horizon of the child there is an absence of expansive delusions, it being common for the patient to show nothing more than a simple but profound dementia. Delusions, either of a grandiose or sexual type, may, however, occur. Childish ideas of grandeur were present in one of Mott's (7) cases, and delusions of a paranoid type are not rare. They were present in 27·5% of Menninger's cases, and one of my patients, a boy, æt. 16, with Fröhlich's syndrome, developed the delusion that he was possessed of the devil and should be thrown into the canal.

Predisposing Causes.

Trauma.—A history of injury to the head by a fall is often given by the parents of the mental defective, and can usually be dismissed as of no ætiological significance, but in the disease we are discussing, I think it quite possible that injury may play a part in determining the onset of symptoms.

Neurotropic strain of S.P.—Various writers have remarked on the frequency of neuro-syphilis in the parents of the juvenile general paretic, but the significance of this observation is doubtful. We must remember that positive spinal fluid findings occur at some time in the course of the disease in 30% to 40% of all syphilitic parents, and that the incidence of neuro-syphilis in an unselected group of syphilitics is somewhere between 25% and 35% ; it is obvious, therefore, that the fact of a juvenile general paretic having a paretic father or

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mother may be merely incidental. If, however, the incidence of this form of syphilis among the parents or the marital partners of neuro-syphilitic patients is greater than that found for any unselected class of syphilitics, then we may legitimately claim to have some clinical evidence in favour of the existence of a neurotropic strain. In some of the records the evidence of neuro-syphilis in the parents of juvenile general paretics is unquestionably high ; Amelien (8), among 238 cases of general paralysis, found six cases of juvenile general paralysis, the parents of whom were paretic. In one remarkable family reported by Rieger (9), the father, son, daughter and grand-daughter had paresis. In Fröhlich's cases the disease existed in 16·4% of the parents, while an additional 13% suffered from tabes, hemiplegia or apoplexy. On the other hand, the recorded instances of neuro-syphilis affecting several members of one family, each acquiring syphilis from a separate source, militate against Levaditi's hypothesis of neurotropism, and suggest that their occurrence can be better explained on the basis of family predisposition.

Another point emphasized by the proponents of neurotropism is the comparative infrequency in neuro-syphilitics of a history of symptoms of early syphilis. For example, in tabes and general paralysis a history of secondaries is the exception, not the rule, and as I have already mentioned, some cases of juvenile paretics seem to escape all the cutaneous and other manifestations of congenital syphilis. But others do not, and moreover, if the juvenile paretic manages to escape bearing stigmata of congenital syphilis, his brother or sister may be less fortunate. Thus, in one family, it may be possible to find members, one or two of whom display the facial cutaneous and osseous signs of congenital syphilis in their most obvious form, while another member has the physical signs of juvenile paresis without any of the ordinary signs of congenital syphilis. Instances of this kind obviously support the theory of a single undifferentiated strain.

Laboratory Findings.

In the adult form of the disease, a positive Wassermann reaction, a lymphocytosis and a paretic or zone 1 gold curve are the usual findings in the cerebro-spinal fluid. In the juvenile form the laboratory picture is very similar. Certainly, so far as I have been able to discover, the Wassermann reaction in the cerebro-spinal fluid is always positive ; a paretic gold curve is also the rule, but the presence of a zone 1 or paretic curve by itself, or even with the other spinal fluid evidence of syphilis, does not, unfortunately, suffice to establish a diagnosis of general paralysis. A pleocytosis may also be expected, but in my experience the average cell-count is considerably below that of the adult. In Klauder and Solomon's series the lymphocytes ranged from 9 to 26 per c.mm. in 8 cases, from 34 to 60 in 8 cases, and more than 100 per c.mm. in 5 cases. In the writer's series 4 cases had counts over 50, 9 counts under 50.

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I think it has been the experience of most of us that the paretic curve may be found in the cerebro-spinal fluid of the neuro-syphilitic subject, who dies, not from parenchymatous syphilis, but from meningo-vascular lesions. I have seen the same laboratory picture in a paralysed idiot, whose brain showed no evidence of general paralysis, either macroscopic or microscopic. Furthermore, it is important to note that changes in the cerebro-spinal fluid identical with those found in general paralysis may be present in the subjects of congenital syphilis who are neurologically normal. This has led to the interesting suggestion that the spinal fluid abnormalities precede for a number of years the physical signs, the patients being in what is termed the " pre-paretic " stage of general paralysis. It remains for future research to determine the significance of these changes, but so far as my experience goes, the cerebro-spinal fluid changes thought to be characteristic of the " pre-paretic " stage usually disappear slowly without any other change in the patient.

It is the consensus of opinion that in acquired syphilis the central nervous system is invaded early in the clinical course, and not at any other time. In congenital syphilis infection presumably occurs *vid* the maternal blood-stream at an early stage of fœtal life. Whether or not the nervous system is invaded in every case is uncertain, but there is no doubt that in many congenital syphilitics the cerebro-spinal fluid is serologically and cytologically normal soon after birth. In the minority the spinal fluid is abnormal, and remains so in spite of treatment. Whether these are the cases foredoomed to develop general paralysis after the lapse of some years, or whether congenital syphilitics with normal spinal fluids may later suffer a second invasion of the nervous system, is at present uncertain. Stimulated by Warthin's (10) researches, I have often searched for nests of spirochætes in the visceral organs, both of congenital syphilitics dying in adolescence and of juvenile general paretics, but I have never succeeded in finding them. I have, however, been able to demonstrate their presence in the cerebro-spinal fluid. Working in conjunction with a colleague at Whittingham (11), I found enormous numbers on six consecutive occasions in the cisternal and lumbar cerebro-spinal fluid of a juvenile general paretic. The period during which they could be observed lasted for 41 days, and then suddenly, for no obvious reason, and without other changes in the cerebro-spinal fluid, they completely vanished. As we had had no success with the adult general paretic, we thought it possible that their presence in the juvenile general paretic's spinal fluid might be a special feature of that type, but I have since searched diligently in ten other cases without coming across a single spirochæte.

Pathology.

The pathology of juvenile general paralysis is usually stated to be that of the adult form, and although it is true that all the cortical changes of the latter

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may be found—and in an exaggerated form—there are nevertheless certain features which are characteristic of the former type.

Foremost among these I would place smallness of the cerebral hemispheres. To a certain degree this is explained by the chronic cortical wasting and the ventricular dilatation, but in greater measure it is an expression of an actual developmental arrest of growth. It goes without saying that the subjects from whom my specimens have been obtained were for the most part feeble-minded, but even in the other type the brain tends to be much below the average in size.

Second only in importance to the smallness of the cerebral hemispheres are the cerebellar changes. Though not conspicuously reduced in size, the cerebellum almost invariably shows atrophy of its folia, and under the microscope the appearances are often striking (Fig. 1). The principal changes are a gliosis far beyond anything seen in other parts of the nervous system, and a tremendous reduction of the molecular and granular layers with a disappearance of the Purkinjë cells.

Another peculiarity, first noticed by Sträussler in 1906, is the frequency with which the Purkinjë elements display two nuclei (Fig. 2). This occurrence, though not confined to juvenile general paralysis, must be regarded as highly characteristic. Its significance is not fully understood, but it seems probable that binucleated nerve-cells are evidence of some developmental disturbance, and in this connection we may recall the fact that the cyto-architectonics of the cerebellum are still in progress at birth, the final disposition of cells being not complete until the fifteenth month of post-natal life.

Of the vascular, neurological and nerve-cell changes I need say little. All, and especially the reaction of the neuroglia and microglia, are very pronounced, particularly beneath the pia (Fig. 3) and in the periventricular region. Iron is present in the microglia in the same abundance as in the adult type, and its recognition by the Prussian-blue reaction offers an easy diagnostic criterion.

Occasionally the presence of unilateral atrophy of certain convolutions, together with the microscopic picture of *status spongiosus* (Fig. 4), indicates that there is no sharp dividing line between the pathological changes of the so-called Lissauer's (12) type of general paralysis and those which are typical of the juvenile form.

Spirochætes cannot be demonstrated with any more certainty than in the adult form. Jahnel's stain may reveal their presence in swarms, or prolonged search may fail to show any at all. The chance of their discovery seems to depend less on the clinical duration than on the presence of seizures during life; they will usually be found in brains of patients who had numerous seizures prior to death.

I have not succeeded in finding spirochætes in the cerebellum, though they have been demonstrated lying in the neighbourhood of the Purkinjë cells by Bouman and Bok (13).

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The other organs of the body may show changes of a syphilitic character. There is usually some degree of chronic interstitial hepatitis; chronic

FIG. 1.—Cerebellum, showing profound cortical atrophy, with disappearance of Purkinjë cells; a surviving cell is indicated by arrow. × 38·2.

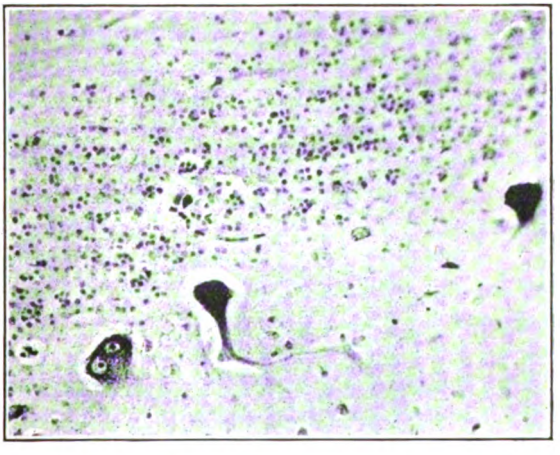

FIG. 2.—Binucleated Purkinjë cell. Cresyl violet stain. × 210.

inflammatory changes are common in the pancreas and ductless glands, and in the larger arteries evidence of atheroma may be found. For many years I have been impressed by the frequency with which one finds long streaks of

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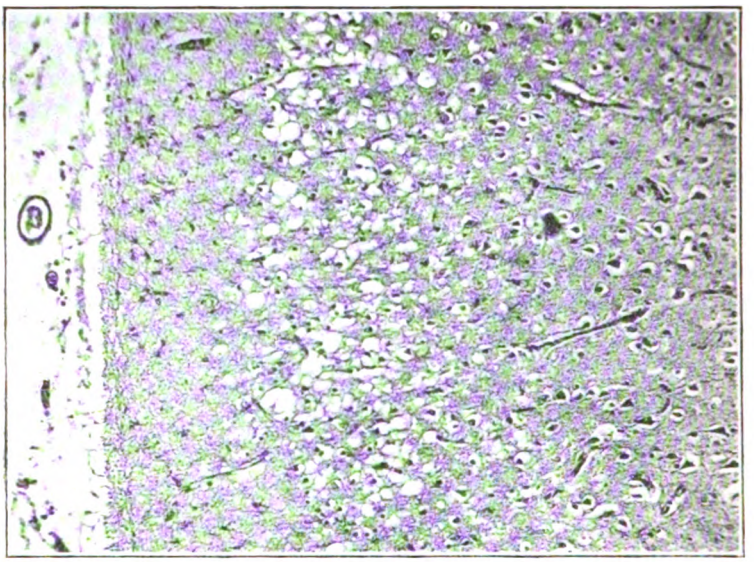

FIG. 4.—Cerebral cortex, stained with hæmatoxylin and eosin, showing spongy appearance—*status spongiosus*.

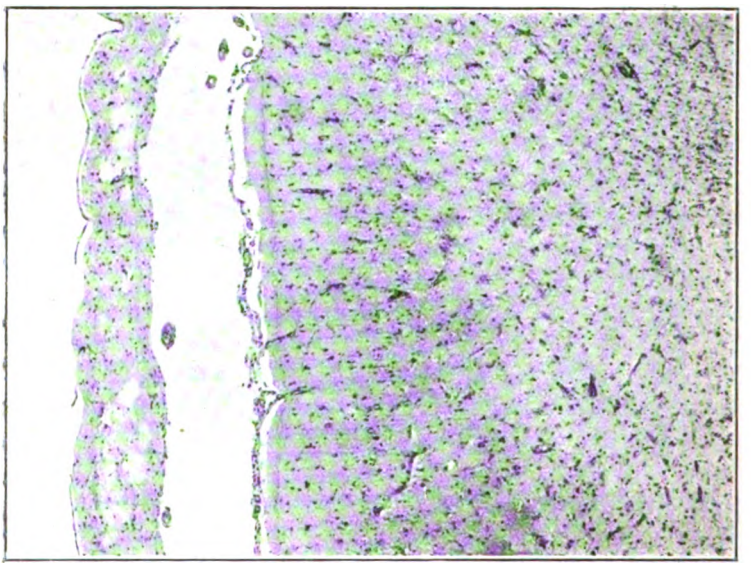

FIG. 3.—Cerebral cortex, chronic stage showing gliosis, disturbed lamination and disappearance of nerve-cells. Note thickened meninges. × 46·6.

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early atheroma in the carotid arteries of the adult general paretic, and I have seen similar changes in the juvenile type.

Treatment.

On the subject of the treatment of juvenile general paralysis there is very little to say, as the most that we hope for is some prolongation of life. Treatment by induced malaria is most disappointing, and I know of no convincing evidence that a permanent improvement in the mental state of the patient has ever been obtained. One of my patients, who was treated by malaria at a very early stage of her disease, showed a slight but transient improvement. Profound dementia quickly supervened, and for eight years the patient dragged out a useless and miserable existence until death finally brought the clinical course to an end.

A greater measure of success has been recorded by Dr. Nabarro, who treated a girl, æt. 6, by induced malaria and intracisternal injections of salvarsanized serum. The improvement in her mental and physical condition was so amazing that when the case was reported in the *Lancet* in 1927 (14), there was every reason to hope that the child would be educable and grow up to healthy womanhood. Unfortunately, with the lapse of time, the treatment has proved to be but partially successful. In reply to my query, Dr. Nabarro kindly informed me that although the physical condition of the patient is excellent, and the blood and cerebro-spinal fluid negative up to December, 1931, the improvement in her mental state has not been maintained. Intellectually she is still quite a child, and is now the inmate of a home for mentally backward children.

Why is it that this form of general paralysis is so completely resistant to all forms of treatment? Here we are on difficult ground, and I believe it is at present impossible to give a completely satisfactory answer to this question. In other diseases we know that the process of repair is favourably influenced when the tissues of the patient are young and in the process of development, yet in juvenile general paralysis the opposite obtains.

In those cases where feebleness of mind exists from birth, neuronic development will have been checked in early life, and the nerve-cells which survive, lacking durability, will stand a poor chance when there is an exacerbation of the infective process in the brain. Antisyphilitic measures will reach their objective too late, but reasoning of this sort cannot be applied to the cases in which a long period of apparently good physical and mental health preceded the onset of symptoms. In these, there must either be an overwhelming infection of the nervous system—and of this there is little evidence—or else the juvenile paretic must have a mechanism of defence which, though it has been adequate in infancy to provoke vigorous cellular reactions in the shape of cutaneous and osseous lesions, fails entirely when confronted with an invasion of the central

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nervous system. As we know, adult general paretics, especially those of the expansive type, not infrequently have periods of remission, from which one may infer that the natural laboratory of the body is at work manufacturing antibodies with which to destroy the spirochætes. But the clinical course of the juvenile paretic is peculiar in that, once initiated, the disease steadily progresses in a downward direction. It is never interrupted by remission, so that we must assume in this case the existence of some metabolic peculiarity which leaves the nervous system entirely defenceless.

Differential Diagnosis.

The principal conditions with which juvenile general paralysis may be confused are idiocy, epileptic amentia, cerebral syphilis, brain tumours, disseminated sclerosis, the juvenile type of Tay-Sachs' disease and certain psychoses.

Unless modern diagnostic methods are applied, and particularly examination of the cerebro-spinal fluid, it is easy to miss the true diagnosis, and to classify juvenile general paretics as cases of idiocy or epileptic idiocy. In the lower grades of amentia one meets with so many obscure neurological conditions that the true significance of fits and transient paralysis may easily be overlooked. In the medium and higher grades where there are mental as well as physical changes to guide one, the differential diagnosis is usually easy. From brain tumour and from disseminated sclerosis, juvenile general paralysis should be differentiated by a careful analysis of the neurological signs, and the principles which guide us in distinguishing these diseases from the adult type of general paralysis must be applied here.

The symptoms of meningo-vascular syphilis may resemble those of paresis very closely. Convulsions, focal signs, Argyll Robertson pupils may be found in both conditions, and even examination of the cerebro-spinal fluid may be of little assistance. As a rule, however, in meningo-vascular syphilis of congenital origin, the physical signs are established in early childhood, and usually some degree of recovery has been observed, whereas in juvenile general paralysis an onset before the sixth year is rare, and the symptoms are essentially progressive. Instead of the slurring articulation of the general paretic, the victim of cerebral syphilis is more likely to have motor aphasia. Labial and facial tremor are almost pathognomonic of paresis.

With regard to the differentiation between juvenile general paralysis and the Spielmeyer-Vogt type of amaurotic family idiocy, there may be seizures, progressive paralysis and blindness in both diseases, but in the latter, the Wassermann reaction is negative and the cerebro-spinal fluid normal.

Summary.

1. About 1% of all cases of congenital syphilis develop paralysis, the sexes suffering equally.

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2. The age at onset is usually between the tenth and sixteenth years, and the duration longer than in the adult type.

3. Stigmata of congenital syphilis may be entirely absent.

4. A general arrest of bodily development or infantilism is common.

5. The neurological signs differ from those of the adult type in the greater frequency of focal signs, complete immobility of the pupils, and the presence of optic atrophy in conjunction with other signs of tabes.

6. Two types of the disease may be recognized. In the one the patient has been defective from birth; in the other the symptoms appear in a child of normal mental development.

7. Expansive and paranoid delusions are uncommon, the usual clinical picture being one of simple progressive dementia.

8. The laboratory findings resemble closely those seen in the adult type. A spirochætosis in the cerebro-spinal fluid of the juvenile paretic has been recorded.

9. Prominent among the pathological changes in the nervous system are smallness of the cerebral hemispheres, *status spongiosus* of the cerebral cortex, atrophy of the cerebellar folia, and binucleated Purkinjë cells.

10. Treatment by induced malaria and arsenical preparations is seldom effective.

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EMOTIONAL FACTORS IN INTELLECTUAL RETARDATION.*

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IT is necessary at the outset to define the limits of this paper. For those profound disorders of mind to which imbecility and idiocy belong, sufficient causes have been found in neural degeneration or acquired disease. Although the fundamental cyto-architectonics of these cerebral degenerates has not been clearly worked out, we can separate off, as a result of post-mortem findings, a group of cases, both congenitally and acquired, which belong to neurology rather than to psychology. Admitting the fact that both imbeciles and idiots have exhibited disturbances of behaviour and emotional control, there is no reason to deny that such phenomena are secondary to neural defects and to such glandular disorders as accompany these neural defects, or occur concurrently as indication of general congenital inferiority. Furthermore, a class of defectives of high grade can be marked off in whom the primary defect is glandular, and in whom the psychological shortcomings are also to be regarded as secondary. But when we turn to that considerable group of children with intelligence quotients of about 80%, the problem of cause assumes a different complexion. Cases that fall within the statutory limits can be enumerated because they require special supervision and control, or, at least, special educational treatment; but of those children who cannot be dealt with legally, or who merely pass muster within the school as dullards, very little can be said as regards their number and distribution, and unless they die of intercurrent illnesses and are brought to post-mortem, nothing can be stated as to the presence of cerebral degeneration, however minor in degree.

For the purpose of limiting the scope of this contribution, I want it to be understood that the cases upon which my views are based were not known to have suffered from any acquired disease of the nervous system; that is to say, there was no history of meningitis, encephalitis or congenital syphilis. The cases of mental retardation studied for the purpose of this paper were in the main retarded to an intelligence level of round about I.Q. 80. It is because this is a very numerous class, and contributes to the handicap upon

* Read at the Annual Meeting of the Royal Medico-Psychological Association at Clacton-on-Sea, July 7, 1933.

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industry and the not insignificant number of juvenile offenders, that I have made it the subject of special study. There were some, however (who will be mentioned), who scored initially an I.Q. sometimes as low as 60. I also include in this study a number of children who were regarded by school teachers as lacking in intelligence, some of whom were actually incapable of learning, but who had intelligence of normal range, and in one case an I.Q. on all tests of 130. I shall divide the cases that were studied into two groups: (1) Those who were regarded as very dull at school and almost unteachable amongst children of roughly their own age, but who gave test scores of *no* more than 80. These presented to their teachers no signs of mental instability on the emotional side. (2) A group of cases regarded both by teachers and from intelligence tests as very dull; that is, with I.Q.'s above 75 or on the margin of defect. This group consists of children with manifest behaviour disorders and neurotic symptoms noticeable to teachers and guardians before referral for investigation of any kind.

Class I was conveniently subdivided into, firstly, those children who, through continued or intermittent illness, suffered considerable limitation of their school lives. The consequence of these interruptions was sometimes merely to limit the child's knowledge of school subjects, hence producing educational backwardness, although the intelligence scores were almost normal. Another group in this class consisted of those who, as a result of interruptions in school life, became inhibited intellectually through the handicap of a feeling of inferiority in finding themselves behind in their lessons, and those who reacted emotionally to the conditions of hospital life, or the atmosphere of invalidism unwisely imposed on returning home. There were still others in this group who of their own accord, despite educational and parental efforts to bring them back to normal, had regressed to childhood, or, more correctly, to babyhood as a result of their inability to solve some elementary mental conflict brought out by the peculiarities of their illnesses.

The range of emotional disorders from which these children suffered covered the whole field of the psychoneuroses and behaviour disorders, meaning by the latter, unmanageableness, open rebellion, cruelty to other children and various forms of delinquency. It was stated above that in the first group there were many who presented no abnormalities of behaviour as far as the teachers were concerned, and that they merely showed a somewhat stolid indifference to learning or a bewildered inability to acquire knowledge. But on closer investigation, that is, by close questioning of the parent with regard to the child's development, its behaviour at home, and its behaviour in the clinic playroom with other children or alone with the physician, it was found that these children were by no means fully adapted to reality, and that they showed, as a result of all these inquiries and observations, a number of neurotic reactions, and varying degrees of failure of co-operation with the external world of things and persons.

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The central thesis of this contribution is: That as the result of treatment not only were emotional disturbances diminished, sometimes to a minimum, but that, parallel with this improvement on the affective side, there followed an improvement in actual application to school work and an improved score on mental tests. In other words, it allows one to argue that affective disturbances act in an inhibitory way on intellectual output. What is the significance of this, and what light does it throw on the whole problem of intellectual development in general and of mental defect in particular?

In an early paper Freud points out the importance of the abandonment by the child of its hallucinatory life before the call of the real external world. He states that "the psychical apparatus had to represent the actual circumstances of the outer world to itself, and to strive to alter reality; with this, a new principle of mental activity was initiated; not what was pleasant was any longer imagined, but what was real, even though it should be unpleasant". Obsessional patients frequently have occasion to say that they cannot help being convinced of the all-powerfulness of their thoughts, feelings and wishes, be they good or bad. Now the obsessional neurosis represents a regression of the mental life to that phase of child development characterized by there being as yet no inhibiting, postponing, reflecting thought activity interposed between wishing and acting. The imposition of specific relationships in the external world between a creature's wishes and its subsequent actions is a measure of its intelligence. This statement is not entirely true of the sub-human world, because the hiatus between the urge and the action consists in what are largely simple conditioned reflexes which have now been incorporated in the functional architectonics of the nervous system. The pleasure principle and the reality which the animal has to face are not so divorced from one another as they are in the human child because, as far as animals are concerned, the period of dependency is brief, and therefore the opportunity for self-absorption is less, since reality has to be met with greater urgency than in the case of the human child. It is almost impossible to make a comparative study of the intelligence of animals and children, largely because our observations of animals are subject to artificial conditions, and if we compare the behaviour of children and animals under the same artificial conditions, we are merely realizing the difference of response as a difference in cerebral complexity. As far as man is concerned, this increase in cerebral complexity allows for a larger range of choice, which may not be entirely prospective, but the result of the largest choice in response allowed by the pre-existing association paths in the cortex. This would lead, firstly, to the possibility of seeing much more of a situation, and, in addition, a greater power of comparison with past situations, and therefore a greater range of choice. But this argument only allows us to state that the human child starts with a better instrument than the animal for the purpose of meeting more and more complex external relationships. Hence the intellectual growth of children.

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Careful survey of the responses made to the revised Binet-Simon scale testifies to the peculiar nature of retarded mentation. Not only is there a failure to appreciate the generality of the experience or definition to which responses have to be made, but there is a more or less intense pre-occupation with the concrete or particular. This tendency to deal with particulars rather than with the general import of a proposition is not solely an indication of lack of logical insight into the general, but an indication of preoccupation of past situations with an urgent hold upon the child's interests. The child is unable to submerge its private interests or calls in the general demand of the situation placed before it in the test. Most imaginative children are prone to respond in this way. The imaginal life, as in the eidetic child, detracts from application to the external reality, of which the test situation is a special, if artificial, mode. A child who is asked the question, " What would you do before starting something important ? " and who replies (as has been the case), " I'd blow my nose ", or " Wash my hands ", or " Say ' Please teacher . . .' " is obviously envisaging the situation, not logically with prospective reference, but with an affective eye upon authority which, in its estimation, is about to pounce upon it for some imagined offence.

Prolonged experience with purely verbal tests, which cannot but suggest to all children particularity or concreteness of a kind, helps one to be charitable in assessing responses, particularly their affective charge. Consistent lack of logical appreciation, inability to judge of comparative and contrasting situations in the absurdities tests may be reasonable grounds for low marking of intelligence. But even here the image-ridden child and the affective-laden child will be flooded by private interests, so that its level of intelligence is submerged.

Hence the need for performance tests which are pre-eminently tests of appreciation of relationships, foresight and planning. Flurry and scattered achievement will be the best guide to the presence of affective load.

Æsthetic considerations inherent in some of these tests—such as the Koh's blocks, or puzzle stimuli such as the Porteous maze—will often release the inhibited child by sheer interest. Such tests are of particular value, for they correlate very highly with general intelligence even in neurotic children, a group of 75 children having been so tested.

Mental tests, therefore, if treated qualitatively as well as quantitatively, will, in skilled hands, be of inestimable value in initially deciding the presence or absence of emotional handicap. Moreover, the general comportment during the test hour, the erratic fluctuation of interest and excellence will be of additional and by no means negligible value in gauging the affective handicaps to intellectual response. Variation in mood—exaltation and depression—are characters not manifest in the child who is just dull and lacks the capacity even to vary with changes of mood. These very changes of mood may be indications of a larval cyclothymic handicap in the same way as retirement or cold hostility may be no mere dull indifference, but a schizoid hostile attitude

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to the test situation. At the same time one recognizes a negativism inherent in many feeble-minded subjects, but truly schizoid in character.

As was stated above, range of choice and control—even range of choice demanded by the situation to be faced—is a measure of intelligence. Affective handicap limits the range of choice because it filters off much by the sieve of privacy, which selects and inhibits in its own way and for its own ends. And furthermore, the control of range of choice will be weakened by the urgent need for some release from private tensions.

We must now consider the effect upon mental growth of the undoubted tendency towards wish-satisfaction, irrespective of the demands of the external world.

In order to understand the nature of mental retardation unassociated by organic lesions or neural arrest of development, it is necessary to survey the development of the sense of reality. It would seem, *primâ facie*, that the human child organism, regarded from the point of view of its nervous system, is a mechanism for co-ordinating response and stimulus, so that the instinctive endowments can run their course when needs arise. These needs will arise from organic cravings within the body, which set going what Pavlov would call "search reflexes", and in addition those responses to external stimulation directing the organism towards escape from the nocuous, or movements towards objects which satisfy needs. In this respect every living creature is not merely a reflex animal, but an animal that responds *ab initio* reflexly to whole situations, these wholes being in the nature of environmental complexes or configurations which arouse instinctual needs. Fundamentally every process, therefore, is designed to reduce tension, no matter whether the reduction of the tension belongs to one or other end of the pleasure-pain range. The period of dependency in the human child allows, if one may put it in neural terms, for the cortical storage of a tendency towards the reduction of tension; or, speaking psychologically, it leads to an implicit appreciation of tension-reducing circumstances, and a desire for their continuance.

All observations of very young children go to confirm the view that there is a tendency to reject those situations which prolong tension, or which do not produce easy or immediate satisfactions. There is, in consequence, a battle between the total set of external stimulations, and that selection of them which brings easement or the pleasure of relaxation. This state of pleasurable relaxation might be more correctly termed a state of Nirvana-like rest in the *status quo*. In this repeated cycle of tension and its reduction in a world of stimulation, the child grows, and the further back we go, the more does the child take refuge in that period of the cycle which is tensionless and relatively pleasurable. In this period its cries will bring satisfaction, producing a feeling of autonomous command over circumstances. I do not use the word "omnipotence", for fear of introducing a term with too cognitive a connotation, but this is what it certainly becomes when the appreciation of the difference

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between inner and outer worlds can be truly regarded as a cognitive state, apart from the affective and conative. This condition has also been described as the "magical" phase in which the child and the world are one, the latter being, as it were, of the child's own making. When the child, however, begins to appreciate the obstinate and unavoidable facts of another world—a "not me" —the magical world gives place to an animistic one in which the child mind introjects into the outer world its own feelings and desires with a tendency to reject what refuses to meet its requirements. Nature, however, has made the organism for reality. The further development of the neuro-muscular system, the myelenization of the motor tracts, is the organic substratum of those dexterities and their enjoyment which makes the child reach out to that very world which is so obstinate and resistant, but yet in which, and through which, its most private and instinctual needs are satisfied. It is at this tangent, where private needs and their reality gratification meet, that intellectual development takes place, and it is the refinement of that relationship which makes for comparison and discrimination, and that appreciation of relationships which lies at the root of intelligence.

The willing abdication of the child, yielding its magic and its animism to the external world which gives it satisfaction, is a measure of its normal intellectual development. Mental retardation must therefore be envisaged in two lights—structural and functional: structural where organic inferiority of the cortex does not allow for intellectual appreciation and action, and functional where resistance to the external world gives rise to inhibition of those mechanisms which would make appreciation of the external world at all possible.

The methodological separation of mental activity into cognitive, affective and conative trends has its dangers, because it may allow us to ignore the affective when cognitive facts are considered; it is equally true, but to a less degree, that we will forget cognitive processes when affective or emotional considerations are our pre-occupation.

The series of cases which have been studied are, in the main, illustrations of arrest in the growth of the sense of reality engendered by affective disturbances. In the series under consideration, it was found as a result of study from the psychological, the psychiatric, and the social points of view, that the mental arrest or retardation was circumstantial; that is to say, circumstances in the early life of the child had produced such affective and emotional preoccupation that the cognitive life stagnated because a more satisfactory *modus vivendi* was obtained by regressing to infantile forms of reaction, manifest in symptoms, behaviour, and above all, in an unnatural preponderance of magical and animistic reactions to the external world. These latter tendencies were shown not only in behaviour and symptom (for that would be merely inferential), but directly from observing the child at play, and in drawing, and in its soliloquies.

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In studying a group of cases at an orphanage, children who were referred for behaviour disorders and neurosis, and in whom intellectual retardation was a constant feature, one was able to study subjects who shared a common deprivation, that is, the loss of one or other or both parents, and early separation from home conditions and ties. Of this series of 25 cases, roughly divided equally between girls and boys from age 7 to 14, all of whom were found to have a 20% retardation in intelligence on the Binet-Simon scale—some being regarded educationally as still more retarded—16 were found to have a high degree of scatter in the tests, and in addition had very definite psycho-neurotic symptoms and behaviour disorders. Owing to limitation in the conditions of treatment, I have been unable to go to any depths into the fantasy life of most of them, but by careful handling and correcting certain environmental anomalies in their orphanage life, there has been in these 16 cases an appreciable improvement in intellectual output parallel with an equally real improvement in the psycho-neurotic and behaviour disorders. I think one is justified in assuming, therefore, that in this series at least a very important group of functionally retarded children has been defined, and that the functional retardation is a manifestation of the effects of affective inhibition of the cognitive life. The insult to normal emotional development as a result of orphanhood, considering this group alone, has produced retirement and a regression characterized by pseudo-intellectual deficiency.

I should like briefly to touch upon that type mentioned above in which intellectual retardation, general or special (that is to say, specific disabilities, linguistic or arithmetical), produces emotional disturbances. Many cases come to one's notice of children with psycho-neurotic disorders and disturbances of behaviour, in whom, on careful psychometric investigation, special disabilities are found. I do not think sufficient notice has been taken of that condition described as " auditory imperception " which may be due to fine degrees of deafness or specific deafness to certain tones. This will obviously lead to limitation in the appreciation of auditory stimuli, and therefore to slowness in appreciation of the spoken word and the whole world of facts derived from this source. Reaction to such a specific disability is frequently found to be not merely indifference to linguistic tasks, but an emotional response born of the feeling of inadequacy. It is a skilled educational labour to devise methods for circumventing such disabilities, but as they are probably much more widespread than is supposed, and that they occur, as one finds from mental tests over a wide range, in children with normal intelligence, the treatment of such cases is very well worth while.

Illustrative Cases.

Case 1.—J. B—, æt. 7·4. Case referred for profound mental backwardness only, but which proved on testing to be a superior intelligence inhibited in school by emotional conflicts.

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Impressions.—A good *rapport* was easily established. The boy was keenly interested in the tests. His attitude was apologetic, and he was very self-critical and seemed to expect criticism. He lacked confidence in himself.

He gave some account of his school position—said he was about in the middle of his class, which he said was made up of boys of his own age. He liked " pasting " best, and found arithmetic hard. He said his teacher complains that he can't remember poetry read aloud to him. This is difficult to understand in view of his test results. He said perhaps he does not concentrate. He showed good insight. He said he did not dream during the day, but " Of course I do at night—funny and frightening ones. A long while ago I dreamt I saw a lady at my bedside, and I seemed awake, and she came and went and came again, and I was very frightened, it was a nightmare ". " But I was very young then " (and therefore frightened).

Results.

Summary :

Burt Revision	C.A. (=chronological age)	7·4.
	M.A. (=mental age)	9·7.
	I.Q.	131.
Memory span for digits (6)		9-year level.
Mental control, digits backwards (5)		11- ,, ,,
Vocabulary (10 words)		8- ,, ,,
Drawing of man (Goodenough)		6½- ,, ,,
Manikin test		12- ,, ,,

These results are preliminary, as only one performance test was given. They are, however, extremely interesting, and indicative of very superior mental ability. His mental age is two years above his chronological, and his I.Q. of 131 is most unusual. His basal was 7 years, his scatter was fairly normal and his range was from 7–12 years. He failed in all 12-year tests. The most outstanding results were : Excellent rote memory for digits, mental control and common sense, reasoning power and comprehension. His vocabulary is only fair.

These tests suggest that his reading and arithmetical ability are somewhat below 9 years. Probably frequent changes of school account in part for this.

His drawing of a man is very poor—a 6½-year performance—lacking in many essentials, showing poor proportion and motor co-ordination. This is difficult to account for.

CASE 2.—R. W—, æt. 9·8. Referred for backwardness and erratic behaviour, truculence, and interfering with other children.

Impressions.—The boy was quite at ease. He was talkative and alert; he seemed very anxious to please, and gave the impression of being a little bit of a prig. He complained about test materials and was rough with material. He seemed eager to do tests, and interested.

Results.

Summary :

Burt Revision	C.A.	9·8
	M.A.	10·1
	I.Q.	104.
Range on performance tests		6–15 years.
Median		10½ ,,
Above average :		
Cube imitation		15 years.
Porteous		12 ,,

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Average :

Cube construction	9½ years.
Healy PC. 2	9¾ ,,
Reversed digits	9 ,,
Span for digits	below 9 ,,
Vocabulary	under 10 ,,

Below average :

Triangle	6 years.
Diagonal	6 ,,

On the Burt Revision with an I.Q. of 104 he ranks normal in general intelligence. His basal on this scale was 8 years, and he failed in all 14-year tests. He showed considerable scatter. He tended to fail in language tests and tests involving memory span, but he did well in tests of reasoning and comprehension. In performance tests he shows a wide range, but on the whole his results with concrete material are better than those with verbal material. He shows good planfulness and persistence.

These results suggest some instability. It is probable he did not do justice to himself.

Preliminary interpretation of the Rorschach test.—His responses to this test suggest a fair mental ability and rather active association processes. His mode of thought appears to be logical, but somewhat stereotyped. He is egocentric, and appears to possess considerable urge to attain self-importance. He is introverted, with a tendency to hypochondriacal brooding. He appears to possess creative ability, and his affective life seems adapted to his environment.

CASE 3.—A. P—, æt. 11·4. Referred for infantile behaviour, manifest in speech, emotionalism and backwardness in class (2 years' school retardation).

Impressions.—On the first occasion he showed marked signs of nervousness and fidgeted with his hands and nose continually. He grinned in rather an apologetic manner whenever asked a question.

On the second occasion he was more controlled and very quickly at his ease.

A good *rapport* was established on both occasions. He was very co-operative, interested and alert. He seemed to crave for toys, and enjoyed the performance tests as so many games. He showed good persistence, refusing to give up until he had had a good try. He showed foresight—tended to view the situation before committing himself. His speed work was fair. His attitude throughout was somewhat apologetic, and he seemed to regard his school achievements as very inferior: " When I go to a new school I expect I shall be in the babies' class ".

Results.

Summary :

Stanford Revision	C.A.	11·4
	M.A.	11·3
	I.Q.	99
Vocabulary (12 words)		below 7-year level.
Digits forward (8)		,, 18- ,, ,,
Digits backward (6)		,, 16- ,, ,,

Performance tests :

(1) Porteous maze	8½ years.
(2) Healy PC. 2	7½ ,,
(3) Ship test	7½ ,,
(4) Cube imitation	7 ,,
(5) Manikin	11 ,,

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On the Stanford Revision he gains a mental age of 11 years 3 months—1 month less than his chronological age—giving him an I.Q. of 99.

A study of his record brings out some interesting facts. There is a considerable scatter. His basal was as low as year 6, while he passed one test (digits forward) at year 18. His failures seemed to be influenced by his poor scholastic achievement, *e.g.*, reading, writing and arithmetic tests, and also by a poor vocabulary. On the other hand, his comprehension was good also rote memory, mental control (digits backwards) and visual imagery (designs). One would estimate, therefore, that his I.Q. was biased by poor educational ability.

He showed an insufficient knowledge of the first four rules of arithmetic; he failed in the 10-year reading test and seemed capable of reading only the familiar four- or five-letter words, and his spelling was very poor. There is some evidence that the latter was influenced by a speech defect.

Results on performance tests, however, are not consistent with this estimation. Except for the Manikin test, which is not very significant at this age level, his range was from 7–8½ years, unusually consistent, and thus much lower than his Stanford mental age. It is difficult, therefore, to conclude anything very definite with regard to his intelligence rating. Results suggest some emotional inhibition.

CASE 4.—F. M—, æt. 9·4. Referred for backwardness amounting to one school year. Emotionally inhibited.

Impressions.—He was friendly and co-operative. A good *rapport* was easily established. He showed himself a capable and intelligent worker, with a quick apprehension and good imagination. He seemed to lack self-confidence. He qualified his statements continually.

Results.

Summary :		
C.A.		9·4
Above average :		
Goodenough M.A.		13 years.
Cube imitation		15 ,,
Cube construction		13 ,,
Dearborn		13 ,,
Passed absurdity test		11 ,,
Average :		
Burt Revision	M.A.	10
	I.Q.	107
Vocabulary		10 years.
Mental control (digits backwards)		9 ,,
Porteous		10½ ,,
Healy PC.2		10 ,,
Substitution test		9½ ,,
Below average :		
Memory span for digits (4)		5 years.

Results on the Burt Revision indicate average general intelligence. His range and scatter were fairly normal. He showed good comprehension and fair reasoning ability. His only poor result was in the memory span for digits.

Performance tests on the whole show superior achievement. His apprehension of spatial relations and his drawing of a man are very good.

On the whole this boy seems to show practical ability superior to linguistic ability.

CASE 5.—H. A—, æt. 15·7. Referred for considerable backwardness—borderline mentally defective. Seclusive, suspicious and apathetic.

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Tested February 17, 1930: C.A., 12·7; M.A., 10·9; I.Q. 85; M.A. (performance) median 9½ years (range 5½ to 10 years).

The upper limit of 85 probably determines H—'s ability, though his true I.Q. may easily be 10 points less. However, he is suffering from great non-cognitive handicaps, which constantly interfere with and mask his mental activity. There thus appears to be almost a mental barrier between himself and a stimulus, and consequently he seems to apprehend both instructions and problems in an unclear, incoherent fashion, and on the other hand, finds it difficult to make a verbal answer with adequate explicitness. It was thus rather hard work to make progress with him. He seems to be too suspicious of one's motives in examining him, to be unwilling to take a risk, and tends, therefore, to repeat replies which have been approved. One gets the impression that he is living a very personal and full fantasy life. He is for ever fidgeting, tapping with his fingers, rotating head and eyes and breathing heavily. He does not respond easily to encouragement, and resists cross-examination.

The performance tests were quite a study in themselves in this case.

He was so over-cautious that he always lost time, even when his performance was otherwise perfect. He checks himself wherever possible, tries to make up his mind about a whole situation before setting out upon a solution. But these favourable marks owe nothing to the effort to get a problem clear from the intellectual point of view. They seem to be temperamentally determined. In some of the tests there appeared a marked periodicity of success, as if violent fluctuations in attention or in application were occurring. His tendency to revert to earlier types of solution in a difficulty was also noted. He works by processes of slow addition and hurried destruction if in doubt, rather than by formulating a general procedure in the beginning and working to this schedule. The result is that he is constantly committing errors, which teach him little, as he is not concerned with the task as a whole.

My feeling is that his problem is a difficult one, and is mainly temperamental and emotional. He cannot be expected to do much on the intellectual side, nor does he appear skilful with his hands. Adjustment, it seems to me, will have to be attempted psychologically rather than socially or in the school.

Tested November 24, 1932: The examiner found the testing of this boy a wearisome process. His reactions were exceedingly slow. There was a long gap between question and answer. He seemed unable to understand the questions clearly, unable to integrate the relevant data securely in his mind, and unable to express himself adequately. Intellectually he seemed very confused. He made a very poor score on timed tests. He was greatly impeded in performance tests by the slowness of his methods. He used his left hand for drawing and writing. He fidgeted with his hands.

Results.

Summary:

Stanford Revision	C.A.	15·7
	M.A.	11·2
	I.Q.	72
Digits forwards (5)		7 years.
Digits backwards (4)		9 ,,
Vocabulary (40)		10 ,,

Performance tests:

Porteous maze	13 years.
Cube imitation	11½ ,,
Cube construction	10 ,,
Diagonal	*c.* 8 ,,
Triangle	Failed.
Range	8–13 years.
Median	10½ ,,

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H. A— ranks low average to borderline defective in general intelligence. His basal was 9 years, his scatter was fairly normal. He showed poor mental control and a poor memory span. His vocabulary is fair. Inconsistently he failed the absurdities test, but passed the problems of fact test. He appeared to have fair imagination.

Results in performance tests are somewhat lower. He was hampered by his slowness of reaction. He did best on the Porteous maze test (13 years), where speed did not count, and his method of reviewing the whole situation first gave him the advantage. From this interview little vocational advice of value can be given. It is evident that either this boy's mental equipment is very limited, or that there is considerable emotional blocking and perhaps a rich fantasy life. Probably he has imagination. Work entailing any speed of reaction would be out of the question. His assets appear to be carefulness, docility and caution.

This case shows little improvement in intelligence, but intermittently he has bright periods. He appears to be developing dementia præcox.

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CHOLESTEROL: ITS RELATION TO MENTAL DISORDER.*

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DURING the last ten or twelve years a great deal of study has been devoted to cholesterol, its metabolism and variation in disease, and its rôle in mental disorder. Since 1926, investigations on this line, laboratory and clinical, have been carried out at Severalls Mental Hospital, and the object of the present paper is to summarize this research, especially in the light of other work, and to indicate what conclusions might be formed.

Cholesterol is a crystalline solid, insoluble in water, readily soluble in ether, acetone, chloroform and other organic solvents. Chemically it is a secondary alcohol containing one unsaturated bond, and capable of combining with organic acids to form esters. (All quantitative references to cholesterol in this paper are intended to indicate the total of free and ester cholesterol.) It is a constituent of all animal cells in free and combined forms, and similar sterols are present in all vegetable cells. The brain and spinal cord and the suprarenal glands contain a large proportion. In the blood it is distributed about equally between the erythrocytes and the plasma. Most of the research on cholesterol in relation to mental disorders has been carried out by observing changes in the blood cholesterol.

Undoubtedly the most accurate way of estimating the cholesterol content of the blood is the digitonin method, but the process is long and digitonin is expensive. For comparative purposes, if proper precautions are taken, the colorimetric method is suitable, and it is extensively adopted. The technique I have followed has been described elsewhere (1), and need here be only briefly summarized. Blood-serum is dried in plaster of Paris, which is then powdered, placed in a thimble, and extracted with hot chloroform for two or three hours in an all-glass extraction apparatus; the extract is concentrated, made up to a suitable volume, and compared with a standard solution in a colorimeter, by Liebermann's reaction; duplicate estimations are carried out on each serum, and the method is checked occasionally by making about fifteen estimations on a given serum, and calculating the probable error from a formula based on the method of least squares. The serum is obtained from venous blood, taken as far as possible under standard conditions. It is not advisable to use whole blood; indeed Gardner (2) has stated that it is essential to use plasma or serum to avoid complications due to anæmia, and on account of the masking of the dissolved cholesterol variations by the large quantity in the

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erythrocytes. It is important that the extraction apparatus should be all glass; it is impossible to make accurate comparisons when the chloroform has come into contact with rubber. Care must also be taken in selecting a plaster of Paris which is free from impurities soluble in chloroform; I have tried some brands which impart a yellow colour to the solvent, making comparison with a standard useless. Some biochemists extract the serum, plasma or whole blood after drying on filter-paper; I gave this an extensive trial a few years ago, and found the results to be always lower than when plaster of Paris was used. I suspect that the high concentration of protein and salt crystals on a small piece of filter-paper prevents complete extraction. The method of extracting cholesterol from 10 c.c. or 20 c.c. of blood and attempting to weigh it can hardly be expected to give reliable results.

A precaution which is absolutely essential is the ascertainment, by each individual worker, of the limits of blood cholesterol in normal subjects. The normal figures found by others ought not to be used for comparative purposes.

The blood cholesterol changes in mental diseases have not been very widely studied; and the results published, and the conclusions drawn from them, are very inconstant. This is partly due to the small numbers of cases considered, the difference in methods, and the failure in some cases to establish a normal standard; but it seems probable that another reason mainly responsible is the classifying of results according to ill-defined diagnostic labels. This is clearly shown by the fact that there is little disagreement concerning the blood cholesterol variations in fairly well-defined entities, such as nephrosis, arterio-sclerosis, mental deficiency and senility, but much divergence of opinion when cases are considered under such headings as epilepsy, dementia præcox, mania and melancholia. The classification of results according to such diagnoses, without qualification, ignores two important facts: firstly, the impossibility of establishing with certainty a diagnosis which can be generally accepted—a difficulty well known with regard to the young manic-depressive and schizophrenic types; and secondly, that the patient's metabolic variations, of which an altered blood cholesterol may be one, are influenced by his mental outlook, and particularly his mood—features which are not necessarily implied in the diagnosis entered in the hospital register. This criticism applies, of course, not only to blood cholesterol variations. The work of Cannon on blood sugar is well known, yet the blood sugar of psychotics is frequently discussed without regard to the fact that it may have been influenced by fear or rage. The visible bodily manifestations of anger and apprehension in the mentally deranged do not appear to differ qualitatively from those of the healthy individual, and one is justified in assuming, at least until there is some evidence to the contrary, that these mood changes will produce metabolic alterations which are likewise similar in the mentally normal and abnormal. It is, therefore, of the greatest importance that the exact mental state of the patient should be recorded when referring to blood cholesterol estimations or any clinical

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or biochemical examination; and if, for convenience, the results are tabulated under the recognized headings of psychiatric diagnosis, they should be further considered in relation to the mood changes.

The observations of other workers on the subject of blood cholesterol in the insane have included very few extensive series. C. J. and M. Parhon (3) examined 48 cases, using serum; in dementia præcox the figures were variable, but tended to be low in the chronic forms, and a diminution was also found in melancholia and in one imbecile; chronic alcoholism and senile states gave high results, and general paralytics showed nothing constant. Targowla, Badonnel and Berman (4) estimated the serum-cholesterol in 60 psychotics; it was found to be raised in chronic alcoholism, early general paralysis and agitated melancholia, and diminished in mental deficiency and epileptic confusion. In confusional states and in epileptics the figures were variable, but tended to be high. The French school has always emphasized the possibility of an association between blood cholesterol and the sympathetic-endocrine system. Hypercholesterinæmia was found almost constantly in 36 senile patients by Tinel, Dupouy and Schiff (5), and in 52 out of 66 chronic alcoholics by Ducceschi (6). In special epileptic investigations the published results have shown much disagreement. Jacobi (7), who examined 23 cases, considered that the blood cholesterol is high, and increases further after a fit. Gray and McGee (8) tested 623 epileptics, using whole blood; the average figure was 165, compared with a normal average of 194; one hour after a fit the average was 162. Robinson, Brain and Kay (9) also found low results in epileptics, especially within twenty-four hours of a fit; they believed that the pre-convulsive period coincided with a diminution. Goodall (10) could find no appreciable difference as the result of fits; Malerba (11) found low serum cholesterol in epileptics. Goebel (12) considered an increase to occur before a fit. He also found the figure to be high as a rule in dementia præcox, and sometimes in general paralysis and cerebral syphilis. Jacobi's (7) other investigations included 19 cases of dementia præcox, with inconstant results, and 20 cases of manic-depressive insanity, the majority showing hypercholesterinæmia. Gibbs (13) obtained low figures in 38 primary dements, especially when associated with recent acute mental states. Forsyth (14) also considered dementia præcox cases to have a lower blood cholesterol than other psychotics. Stenberg (15), on the other hand, found high figures in early dementia præcox, and normal results in the few remissions examined; he considered that emotional states are accompanied by a rise in blood cholesterol, while apathy is associated with a diminution; this variation was shown by 7 manic-depressive cases examined during remissions as well as when mentally ill. Lockwood (16) obtained inconclusive results in a group of 24 manic-depressives, but observed the interesting fact that blood cholesterol varies inversely with the hyperglycæmic index. Gray and McGee (8) also examined 108 mental defectives, and found hypocholesterinæmia predominating. In a series of neuro-syphilitics the results

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of Rosen, Krasnow and Notkin (17) were inconstant, but McFarland (18) found a large proportion of high serum cholesterols in similar cases. Schube (19) examined 200 cases of mental disorder, and comparing them with a normal series, found a greater range of blood-cholesterol figures, 52% being below the normal limits, but the figures are not given for the actual types of disorder. Shaw and Sharpe (20) found marked hypocholesterinæmia in 10 cases of primary dementia, and an abnormal increase in states of mania.

My own series of 336 cases has already been published (1), but I must briefly summarize it here, since the results have considerable bearing on the further investigations. The serum cholesterol is high in cases of dementia præcox showing emotional indifference, and within normal limits in those characterized by confusion or emotional excess ; when a dull patient becomes excited or agitated, his serum-cholesterol is much lower. In mood psychoses also the cholesterol content is high during remissions, when the emotional state approximates to normal, and falls with a relapse into a manic or melancholic state. Chronic alcoholism shows similar changes. In epilepsy the figure is again high, and a reduction occurs with periods of confusion, and often in association with a fit. Imbeciles without complications have practically normal cholesterol values ; imbeciles with epilepsy or prominent mood changes show the cholesterol variations of these disorders. The usually high serum cholesterol of organic dementia and senile states need not be further considered.

Briefly, an increase in emotional tone is practically always associated with a fall in the blood cholesterol, whether the initial value is high or within normal limits, and whatever the type of mental disorder. It seems very probable—though this would be difficult to verify—that a similar reaction occurs in the mood variations of the healthy individual. Whether this be so or not, one is naturally led into a consideration of how an alteration in the blood cholesterol could be associated with emotion, the mechanism by which one might be induced by the other, and the biological value of the reduced cholesterol content.

The association between emotion and the endocrine glands is well recognized ; the influence of the latter on the blood cholesterol has been stressed by the French workers, but has attracted little attention in this country. Most work has been done in relation to the thyroid gland, observations being made on patients with thyroid disease, on animals after thyroidectomy, and in association with thyroid administration. Luden (21), in 1918, observed the blood cholesterol to be high in myxœdema, with a return to normal after appropriate treatment, and within the normal range in Graves's disease. In 1924, Epstein and Lande (22) found the blood cholesterol to be lower than normal in exophthalmic goitre, and high in cases of subnormal basal metabolism, in which they included myxœdema and chronic nephritis. Gardner and Gainsborough (23) criticized these findings, and denied any association between basal metabolism and cholesterol ; they did, however, find the plasma content in 14 cases of hyperthyroidism to be a little lower than normal, and

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agreed that the value is high in untreated myxœdema. Rémond, Colombies and Bernardbeig (24), in 1924, found hypercholesterinæmia in rabbits after thyroidectomy and parathyroidectomy. Since the observations of the earlier workers many records have been published demonstrating the effect of thyroid on the blood-cholesterol. In patients with thyroid disease there are the findings of Wade (25), Laroche (26), Mason, Hunt and Hurxthal (27), Max Lévy and M. E. Lévy (28) ; in animals the experiments of Wade (25), Blinoff (29), Parhon and Derevici (30), Onizawa (31), and Westra and Kunde (32) ; some of these have also tested the effect of thyroid administration. There is almost complete agreement in the conclusions, and it may be accepted that the administration of thyroid extract lowers the blood cholesterol ; pathological or experimental deprivation of the gland increases it ; and the tendency is for Graves's disease to be associated with a lowered content, though not necessarily below the normal limits.

In 1928, while treating with thyroid extract a patient with dementia præcox whose appearance suggested subthyroidism, I recorded a fall in serum cholesterol from 502 to 158 mgrm. per 100 c.c. ; coincident with this there was a great improvement in the mental state. Relapse into an apathetic condition and a cholesterol rise to 414 followed suspension of treatment. To test the effect of administration of the gland to psychotic patients a number of different types were treated for varying lengths of time, and the serum cholesterol estimated at brief intervals. The 22 patients thus investigated included ten different types of mental disorder, " functional " and organic ; the details have been recorded elsewhere (33). In every case the result was the same. The effect of thyroid administration is a rapid fall in the cholesterol content of the blood ; with a constant dose the diminution presently becomes more gradual, or there may be a tendency to increase, which may even be maintained on large doses. The result of stopping thyroid is always an increase in the blood cholesterol, often to an amount considerably in excess of that recorded before treatment. The variety of cases dealt with makes it obvious that thi effect of administering the gland is not in any way associated with any special psychosis, and strongly suggests that it would occur in those without mental disorder. The results are thus consistent with those of Luden, Epstein and Lande, and others referred to above The tendency of blood cholesterol to rise in spite of persistent thyroid administration also explains the failure of Gardner and Gainsborough, and others, to find hypocholesterinæmia in Graves's disease.

Comparing the results of this investigation with the former record of blood cholesterol in the insane, it is seen that there is a striking similarity of the thyroid reduction of cholesterol to that accompanying excessive emotion. This parallelism makes it possible to explain the cholesterol changes in psychotics. The thyroid gland is part of the mechanism concerned with the bodily reaction to an emergency, including the emotional changes of this reaction. The raised blood cholesterol of the emotional deterioration typically

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seen in some primary dements is, therefore, to be associated with the similar picture found in myxœdema and in animals after thyroidectomy. Temporary excessive emotion, such as excitement or agitation, like temporary feeding with thyroid, lowers the blood cholesterol, and subsequently there is a rise to a higher level than before ; this explains the hypercholesterinæmia of remissions following acute mental states, the cessation of emotional stimulation of the gland being similar to cessation of thyroid administration. Finally, the tendency of the blood cholesterol to rise after its initial fall, even while thyroid extract is continued, is consistent with the raised level found in prolonged states of mania and melancholia. It is probable that emotion causes a lowering of blood cholesterol by stimulation of the thyroid gland.

Can this be correlated with the other known functions of thyroid secretion and with what is known of the part played by cholesterol in metabolic activity ? G. W. Henry (34) has carried out an interesting investigation of the basal metabolic rate in mental disorders, and has found that excessive emotion and increased psycho-motor activity are associated with accelerated basal metabolism ; apathy and retardation are characterized by slowing of the basal metabolic rate. The function of the thyroid in stimulating metabolism is well recognized. How this influence is exercised, whether directly on the tissue-cells or by way of nervous stimulation, is unknown ; it is worth while considering whether an alteration of the cholesterol in the blood and tissues can be concerned in this function. In doing so it is necessary to refer briefly to the other known variations of this substance in the body, and to its biophysical properties.

With regard to metabolism, the situation has been summed up by Gardner (35). " We know nothing whatever of the function of cholesterol in the cell, and very little of the part it plays in general metabolism." The physiological and morbid variations of blood cholesterol have been recorded by Gardner (35), Chamberlain (36, 37) and others. Gainsborough (38) observes that the level can be raised or lowered by prolonged feeding with diets rich or poor in cholesterol, but hypercholesterinæmia cannot be induced as the result of a single meal. The only alteration which seems to be connected with the subject here considered is the hypocholesterinæmia of fever, the reasons for which, Gainsborough states, are not understood. Diminished blood cholesterol is noted by Campbell (39) as occurring in most acute infections, by Malerba (11) in acute febrile diseases, and by Gerard and Lemoine and others (41) in tuberculosis ; the cholesterol diminution during bacterial infections is stated by Chamberlain (40) to be proportionate to the intensity of infection. Lereboullet, David and Donato (42) made numerous tests on children suffering from diphtheria, and found rapid lowering of the blood cholesterol, especially in severe cases ; they note that intercurrent disorders, such as broncho-pneumonia and otitis media, always cause hypocholesterinæmia.

We have thus three types of case in which there is altered metabolic rate and variation in blood cholesterol—the emotional group, the thyroidic, and the

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pyrexial. Are there any biophysical properties of cholesterol which enable us to link the two associated conditions?

It is well known that lecithin and cholesterol are in some respects antagonistic. Burns (43), in his *Introduction to Biophysics*, states that the ratio of water to solids in a cell depends directly on the cholesterol content and indirectly on the lecithin content. He quotes Leathes, who showed that when a molecular layer of lecithin is spread on water, the area covered is reduced by cholesterol: "In some way this alcohol causes the long-chained phospholipin to pack its molecules more closely together". Mathews (44) notes the protective action of cholesterol against hæmolysis of red cells, and its neutralizing or retarding action against some lipolytic enzymes. The experiments of Shaw and Sharpe (20) in the laboratory of the County Mental Hospital, Stafford, are of great interest. Using washed erythrocytes of sheep's blood and diluted cobra venom, they showed that the presence of lecithin caused the red cells, normally resistant to the venom, to hæmolyse, and that cholesterol, if added in an amount above a certain definite proportion to the lecithin, prevented or delayed hæmolysis. Their other experiments demonstrated the influence of cholesterol as a controlling factor in oxidative processes, and in reducing surface tension, especially in colloidal state; also its retarding action on the diffusion of potassium salts through a membrane. Tsuneyoshi's experiments showed the accelerating effect of lecithin and the retarding effect of cholesterol on the consumption of oxygen by tissue powder and on the oxidation of an amino-acid on charcoal (45).

Applying the knowledge of these physical properties to animal cells, it would appear that the greater the amount of cholesterol present, especially in proportion to lecithin, the lower will be the metabolic activity of the cells. This has been tested by investigations on the lecithin and cholesterol contents of normal and malignant tissue. Jowett (46) reasoned from the properties of cholesterol that cells having high metabolic rates, *e.g.*, growing or active cells, would show a low cholesterol-lecithin ratio so as not only to have more permeable membranes for the taking in of oxygen and nourishment from their environment, but to allow also more freedom for chemical activity between different parts of the cell. He analysed human tissues, normal and malignant, and obtained results tending to confirm that malignant cells have a low cholesterol-lecithin ratio. Jowett's results are consistent with those of Bennett (47), who, in 1914, found that the cholesterol content of cancerous tissue increases with the age of the tumour. Iwano (48) observed that the cholesterol content of the central part of a new growth, where activity is least, is higher than at the periphery, the lecithin percentage being constant. This was confirmed recently by Uramato (49), who made an extensive analysis of rat carcinoma tissue. He found that the cholesterol amount increases steadily with the age of the tumour, this increase being specially noticeable at the central portion of the growth in its later stages; lecithin, on the other hand, is present in the same percentage

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at the centre and periphery, and decreases equally in these regions with the tumour age. Evidently the cholesterol-lecithin ratio is lowest at the most active part of a carcinoma, and at its most active stage. Uramato also considers that oxygen consumption decreases with tumour age, but there does not appear to be any investigation into this point.

We have now sufficient evidence to associate, causally, a diminished blood cholesterol with increased metabolic activity of the tissue cells. It is hardly possible that neurons can escape sharing in this association, and we can attempt to link up the blood cholesterol variations dependent on thyroid secretion or emotion with nervous activity, and so with mental disorder; but caution is necessary in reasoning from a variation of physiological activity, such as altered metabolic rate, to a pathological condition of nerve-cells. It is highly improbable that alteration in blood cholesterol, which is subject to physiological variations—including those of emotion—could in any way lead to disease or death of nerve-cells; I can no more imagine neuronic decay resulting directly from moderately high or low blood cholesterol than from moderately high or low blood sugar. The neuron will therefore be considered here as being affected only as it has been shown that any other cell might be affected—that is, in increase or decrease of its own activity. On this basis a diminished blood cholesterol will tend to produce increased neuronic excitability and activity, with increased psychomotor activity and probably emotional manifestation; a raised blood cholesterol should diminish nervous activity and cause mental retardation and apathy. The association between the nervous system and cholesterol is thus a reciprocal one; excitement lowers the blood cholesterol content, and a lowered blood cholesterol tends to increased nervous and mental activity. There must, of course, be limiting factors to prevent the establishment of a vicious circle with ever-increasing excitement and constantly falling blood cholesterol; the tendency already observed, for the blood cholesterol to rise after the preliminary fall, in spite of maintained thyroid administration, is one such restraining influence. There are probably others, dependent on the capacity of the reticulo-endothelial system, or whichever organs are so concerned, in taking up cholesterol from the blood.

The hypothesis so formed has some bearing on the treatment of abnormal mental states. If excess of cholesterol leads to diminished activity of the nervous system, states of apathy and retardation should respond favourably to any means of lowering the blood cholesterol content; and psychomotor over-activity might be improved by raising the value. It must, however, be emphasized that any such treatment can only be symptomatic; it could only be expected to give successful results when the condition is purely one of altered rate of nervous activity; a case of dementia præcox might be made less apathetic by stimulating the nervous system, but the delusions could hardly be affected, except in an adverse way. Mental hospital treatment, however, is so largely symptomatic that induced cholesterol variation is worth considering.

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(1) *Reduction of blood-cholesterol.*—The ideal case for such treatment is one of simple mental inertia, characterized by slow perception, retardation and apathy. Myxœdema provides the only example of such mental disorder, and one need not stress the necessity for thyroid administration. Mental improvement is coincident with the fall in blood cholesterol, and the thesis here advanced suggests that the improvement is directly dependent on such reduction. In other mental disorders the effects of diminishing the blood cholesterol are those which might be expected as the result of increased nervous activity. This was observed in the 22 cases previously mentioned in this paper, treated for varying periods with thyroid gland. The primary dements were stimulated to become less dull, more hostile, or even hypomanic. A melancholic showed increased agitation ; the general paralytics became irritable and difficult to nurse. In the case of Parkinson's disease the tremor became more pronounced : the patient with simple mania remained manic until after thyroid treatment was stopped, when a marked improvement coincided with the rise in blood cholesterol to a high level.

In some cases of dementia præcox another beneficial agent which probably acts by cholesterol reduction is fever, which has already been noted as lowering the blood cholesterol. It is not infrequently observed that such patients show improvement, often to a considerable degree, during and immediately after an acute febrile illness, and it is the dull and retarded patient who shows this best ; the lowering of blood cholesterol has allowed the neurons to function more freely. With the subsequent rise to the former high level there is the almost inevitable relapse.

(2) *Raising of blood cholesterol.*—I have attempted this in cases of excitement and over-activity. On theoretical grounds the patient most likely to benefit is the one showing excessive emotion and increased psychomotor activity, uncomplicated by delusions or hallucinations. Simple mania often falls within these limitations, but the excitement of other mental disorders might be lessened by a substance which, if the conclusions here reached are correct, is a natural sedative. It is not easy to raise the blood cholesterol content ; the mechanism maintaining it at more or less constant level seems to act more readily in removing excess than in supplying deficiency. As Gardner pointed out, administration in the diet is only slowly effective, and I have had difficulty in getting patients to swallow the unpalatable emulsion of cholesterol in milk. Inunction with lanolin, which is largely cholesterol and its esters, has been tried in some of my cases, but too few to judge the effect ; absorption is probably too slow, and removal from the blood too rapid, for a successful result. Leopold and Bernhard (50), however, have reported that the blood cholesterol of children can be raised by lanolin inunction followed by ultra-violet radiation ; and they quote Berman as having obtained a similar effect. The most rapid method of producing hypercholesterinæmia is intramuscular injection of cholesterol dissolved in

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olive oil. Harris and Lipkin (51), during some experiments on blood-pressure, found a considerable rise in blood cholesterol one hour after injection of 1·5 grm., with return to normal within a few hours. I have tried injections in 24 patients, some of them on repeated occasions in different relapses. Four cases may be quoted as illustrating the results:

(1) *Acute confusion.*—A man, æt. 55. Excitable, resistive, restless, sleepless; duration six days. Cholesterol in 1·0 grm. doses, intramuscular, on January 18, 20, 22 and 25, 1931. Temporary improvement was apparent within four hours after each of the first three doses; excitement diminished and he was able to sleep; six hours after the third dose he was mentally clear and conversed rationally. The fourth dose was given after a few hours' further restlessness, and was followed by drowsiness. There was no further excitement; he was ultimately discharged, though recovery was incomplete, there being periods of depression.

(2) *Epileptic confusion.*—Male, æt. 50. Excitable, restless and confused for nine days. One-gramme doses on November 28 and 30, 1930. Drowsiness for two days after second dose, then rapid recovery. No relapses occurred and he was discharged as recovered.

(3) *Dementia præcox.*—A man, æt. 28. Duration two months; katatonic excitement for eight days. Two injections of 1·0 grm. with an interval of forty-eight hours. Improvement within six hours of the first dose; a few hours after the second he became stuporose, and remained more or less so, without any excitement, for about a month; improvement then followed and he was discharged seven months later.

(4) *Recurrent mania.*—Fourth attack; male, æt. 55. Duration twelve days. Typical manic condition. Two injections of cholesterol, with a two-day interval; improvement twenty-four hours after the first dose, and recovery was uninterrupted.

The whole 24 cases may be summarized briefly. In 13 patients injection of cholesterol seemed to be effective in reducing excitement within a few hours, Indications of relapse one to three days later were frequent, but further improvement occurred shortly after second or third doses, often with rapid recovery from the acute state, occasionally only gradual. Five of these 13 were chronic relapsing patients, and the treatment did not appear to prevent later relapses, but in three cases these have been much less frequent in the two and a half years since treatment. Of the 8 recent cases, 5 were discharged and 3 became chronic mental invalids. The 11 cases in which cholesterol injections had no immediate effect included 3 epilepsies, 1 involution manic state, 1 case of agitated melancholia, and 6 cases of excitement in the course of dementia præcox.

The cholesterol solution was prepared by dissolving 1·0 grm. in 20 c.c. olive oil in long-necked bottles, which were then sealed and sterilized in boiling water for an hour on three successive days. When cold, this amount of cholesterol is not completely soluble, but easily dissolves on heating. The warm solution was injected into the gluteal muscles. The maximum dose used was 1·5 grm. but 1·0 grm. was the usual, and sometimes 0·5 grm. on successive days. No ill-effects were observed, apart from slight transient pyrexia in 2 cases, and in 1 case a rapid pulse for two days. To exclude the possibility of the olive oil having any effect, a frequently relapsing patient, in whom cholesterol injections

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were followed by a remission, was given, during the next relapse, two injections of pure olive oil ; the excitement was not influenced, but when seventeen days later cholesterol in oil was used for the third injection, there was temporary improvement.

Definite conclusions must not be drawn from the results of cholesterol injection ; the cases tried are too few, and the state of increased psychomotor activity which was considered an indication for the treatment is one in which rapid and spontaneous improvement is frequent ; but the often observed sedative effect within a few hours of the injection, when the increased blood cholesterol was probably at a maximum, suggests that in some cases the change is due to the cholesterol, and this view is at least consistent with the suggested association between blood cholesterol and mental state.

Possibly connected with induced hypercholesterinæmia is the method of treatment which has been suggested for persistent melancholia after return of good bodily health—that of making the patient physically ill by thyroid administration for a week. Stoddart (52) recommends increasing doses up to twelve 5-gr. tablets daily, and states that the patient usually deteriorates physically and mentally under this treatment, but that subsequent improvement and recovery occur in a number of cases. This may be due to the considerable rise in blood cholesterol which follows the cessation of thyroid feeding.

Summary.

The facts which have been considered, and the conclusions which seem justified from them, may be summarized as follows :

(1) Blood cholesterol is lowered in certain general conditions affecting the organism as a whole : (*a*) Heightened emotion and quickened psychomotor activity ; (*b*) fever ; (*c*) hyperthyroidism. A factor common to all these is increased metabolic rate.

(2) Blood cholesterol is raised in (*a*) apathy and diminished psychomotor activity ; (*b*) subthyroidism. In each of these conditions there is diminished metabolic rate.

(3) The properties of cholesterol are such that when the cholesterol in blood and tissues is lowered, increase of metabolic rate is to be expected ; when cholesterol is increased, diminished metabolism should result. The analysis of actively-growing tissue supports this view.

(4) Therapeutically induced diminution of blood cholesterol acts on the nervous system, in some cases at least, as a stimulant, causing increased mental activity.

(5) Therapeutic raising of the blood cholesterol acts on the nervous system, in some cases, as a sedative, causing diminished mental activity.

It is concluded that cholesterol is one of the controlling factors of cellular metabolism, and that neurons are susceptible to quantitative changes of this substance in their environment.

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Although this conclusion fits in with the observed facts, and even if it be confirmed by further research, it must not be considered that it settles more than one aspect of the relationship of cholesterol to neuronic function and mental disorder. Obviously there are many agents by which the rate of activity of the nerve-cell may be influenced, some of them probably closely related to cholesterol; lecithin, for example, must be an important factor. Although the studies here recorded have dealt with cholesterol alone, it has not been forgotten that the functions of this substance can hardly be isolated from those of many others; the hypothesis formed is but a working basis—I think an accurate one—for further investigations. It must be emphasized that no attempt is made to associate cholesterol with pathological conditions of the nervous system, or with such diseases of the mind as lead to altered personality. The association is strictly confined to those disorders and symptoms which can be regarded as physiological activities altered only in degree. The therapeutic indications arising out of the conclusions must also be regarded with caution until the influence of other associated factors is more fully understood. Finally, if it be argued that so much is excluded, and so little of practical value remains, it can be pleaded that there is indicated the direction in which future investigations can profitably be made, and even if such research should add little to psychiatric knowledge, there is the probability that it would throw light on a very obscure corner of physiology.

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SOMNIFAINE NARCOSIS: TOXIC SYMPTOMS AND THEIR TREATMENT BY INSULIN.*

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DURING the last decade prolonged narcosis has been accepted as a most valuable form of treatment in mental disorder, but many psychiatrists refuse to use it because of its dangers. The present paper presents clinical and laboratory evidence that a method has been devised whereby most of the toxic symptoms can be obviated. It is claimed that a large proportion of these symptoms are due to upset of carbohydrate metabolism of the liver and heart by the narcotic, and that in the administration of insulin and glucose as an integral part of the treatment a rational method of prevention has been evolved. No attempt is made to record the results of treatment, as it is proposed to publish this separately, the aim of the present paper being to show the elimination of toxic symptoms by the suggested modification of treatment.

Treatment of mental disorder by prolonged narcosis was originated as long ago as 1901 by O. Wolff (1). In that year he published a paper in which he described the results obtained in 3 cases of acute confusional insanity (akute Verwirrtheit), using trional over a period of twelve days. Two of the patients recovered and one showed temporary improvement. Later in the same year he published details of 3 more cases, one of which recovered. After a further period of trial, he came to the conclusion that prolonged narcosis as a form of treatment was a distinct advance in psychiatric therapy, and that the dangers involved were minimal. His work, which was repeated by several observers, had on the whole a poor reception. This was partly owing to the toxic risks that were encountered, but partly also on account of the inherent prejudice of the medical profession at that time against the use of narcotics for such purposes. The method gradually fell into disrepute, and prolonged narcosis as a form of treatment remained in abeyance until 1920. It is true that an attempt at revival was made in 1915 by Epifanio (2) with sodium luminal, but not until Kläsi's (3) work on somnifaine narcosis was published was the treatment put on a firmer basis.

At that time (1920) Liebmann (4), of the Zürich Medical Clinic, had begun to use somnifaine in the symptomatic treatment of such disorders as delirium tremens, tetanus and insomnia, and had found it of great value, the drug

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proving safe for these purposes and showing little tendency to cumulate. This led Kläsi to the thought that somnifaine might be tried for prolonged narcosis in certain types of mental disorder. In 1922 he published the results of treatment of 26 cases of schizophrenia, and claimed that one-quarter to one-third of the cases improved to such an extent that they were either discharged, or transferred to convalescent wards. This startling assertion from a man of Kläsi's reputation caused many notable psychiatrists on the Continent to give somnifaine narcosis a trial, and during the following years a wealth of literature on the subject appeared. The opinions expressed therein were somewhat at variance: some authors (Werner (5), Moser (6), Möllenhoff (7)) regarded the treatment as unreliable and dangerous, whereas others, notably Demole (8), Wyler (9), Furrer (10), and Gjessing and Lingjaerde (11), were enthusiastic and reported good results.

Müller (12), in 1925, published an admirable critical survey of the literature up to that date, and included therein an account of 24 cases personally treated. His attitude towards the somnifaine treatment was severe, and he endorsed the view of other observers that Kläsi was far too optimistic. He agreed that with prolonged narcosis one obtained results which no other remedy gave, but stated that, while the principle of this form of treatment undoubtedly had ensured for itself a place in psychiatric therapy, somnifaine could not be regarded as the ideal remedy owing to its dangers. Against this somewhat pessimistic view of Müller comes the important work of Oberholzer (13), who, during a period of three years, carried out 186 narcoses on 92 patients in the Burghölzli Clinic in Zürich. In his opinion, prolonged narcosis had at that time (1927) fallen into disrepute largely because its therapeutic significance had in many places been overlooked and its dangers over-estimated. Owing to his extensive experience of the narcotic treatment Oberholzer's view must carry some weight, and his criticism of Müller's survey is to some extent justified. He noted that amongst the 17 authors whose work Müller summarizes, there was only one (Stuurmann (14)) who had collected material extending to 50 cases, the others having published results on work which frequently embraced fewer than 20 cases. His objection is that the observers were, for the most part, inexperienced in the management of prolonged narcosis, and, therefore, encountered a greater number of catastrophes and failures. The combined results of the work of these 17 authors could not be compared with the results in a large series of cases investigated by a worker who had had previous experience in the field. Even so, complications were abundant in Oberholzer's cases, and, although no fatalities occurred, he was compelled to cut short the treatment in many of them.

In England, somnifaine therapy was first tried at the Maudsley Hospital in September, 1924, the results being published in 1926 by Dawson and Barkas (15). Their conclusions may here be quoted: "In most cases where treatment can be continued, a twilight sleep state can be maintained; any

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improvement following this treatment is quite transitory, there being no change at all in some cases; there are considerable risks attached to its use, the pulse becomes progressively weak, rapid and often irregular, and it requires careful watching of the heart to avoid deaths. Generally speaking, one may say that somnifaine as a soluble sedative which can be given intramuscularly has its place in the list of available sedatives, but has considerable risks and no special advantages. If a twilight sleep of some days' duration is of benefit in some cases, this has not been evident in our series, and the advice of Müller may well be taken, to produce it where desirable by means of combinations of hypnotics rather than by somnifaine." Against this rather sweeping condemnation of the therapeutic value of somnifaine one may offer several criticisms. In the first place, owing to their over-cautious attitude these authors employed far too small doses. Thus, in Case 10, only 7 ampoules of somnifaine were given over a period of six days; in Case 13, 6 ampoules in five days; and in Case 7, 6 in four days; making an average of just over 2 c.c. per day per patient, whereas the consensus of opinion of all authors on the subject is that the average effective dose is 5–6 c.c. *per diem*. Secondly, the usual duration of narcosis in Dawson and Barkas's series was four to five days (their maximum being seven days), a period which is less than half that advised by Oberholzer, Stuurmann, Müller and others. Whilst admittedly some cases do improve after having undergone four or five days' treatment, it is generally agreed that a minimum of ten to fourteen days is required to ensure success. It cannot, therefore, be said that Dawson and Barkas fulfilled the conditions necessary for effective narcotic treatment, and this accordingly reduces the value of their conclusions on its therapeutic action.

The knowledge that Kläsi's somnifaine therapy was fraught with considerable risks led many psychiatrists, who still had faith in prolonged narcosis as a form of treatment in mental disorder, to try other narcotics in the hope of discovering an ideal drug, which would produce the requisite degree of narcosis without dangerous bye-effects. Numerous substances have been investigated, the barbituric series having had an extensive trial in the form of such drugs as veronal, medinal, dial, luminal, nembutal and amytal. Other remedies that have been used are avertin, paraldehyde (*per rectum*), hyoscine and even nitrous oxide (Zador (16)), and ether (Schilder and Weissmann (17)). Various ingenious combinations of these drugs have been tried; *e.g.*, luminal-bromide-somnifaine (Schäfgen), paraldehyde-hyoscine, etc., with but little advantage. When all is said and done, it must be admitted that so far as toxicity and therapeutic value are concerned, little advance has been made on the original drug used by Kläsi; and therefore the choice of a suitable narcotic must, within limits, depend largely on the personal inclinations of the psychiatrist.

In view, however, of the success obtained in the prolonged narcosis therapy of mental disorder and the failure to discover a drug which produced sufficient narcosis without dangerous bye-effects, the search for modified methods of

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treatment which would diminish or eliminate the toxic action became an urgent problem. Such a modification is described in this paper, and is based on (*a*) a detailed clinical investigation of cases undergoing treatment, and (*b*) observations made in the laboratory on the action of narcotics on such organs as the brain, liver and heart. For convenience of description it has been found most expedient firstly to present an analysis of the toxic symptoms occurring during prolonged somnifaine narcosis, correlating these wherever possible with the laboratory findings, and finally to outline the new technique adopted as a result of these investigations.

Forty patients were submitted to a prolonged somnifaine narcosis for a period of eight to fourteen days, 46 treatments being carried out in all. These cases can be grouped as follows: 20 schizophrenics, 13 manic-depressives, 2 involutional melancholics, and 5 psycho-neurotics. The technique, which is discussed more fully below, consisted of injecting an average of 5–6 c.c. somnifaine every 24 hours. In most cases each injection of 2 c.c. produced periods of sleep varying from four to eight hours. Clinical and laboratory examinations on blood and urine were carried out before, during and after the treatment in the majority of cases.

The bodily symptoms and toxic phenomena encountered may be conveniently dealt with under the following headings:

Disturbances of Co-ordination.

These, according to Meerloo (18), are directly referable to an effect of the drug on the brain-stem. The speech was thick and slurring in all cases treated, and closely resembled that met with in alcoholic intoxication. As a rule this symptom does not become well marked until the second or third day of narcosis, and disappears rapidly after the cessation of treatment. Ataxia of the limbs is a conspicuous feature when the patient has come well under the influence of the narcotic. One of the most important disturbances is difficulty in swallowing. Müller found it rarely absent, though only occasionally troublesome. In Oberholzer's cases it was of frequent occurrence, but was not regarded as dangerous provided the patient was sufficiently awake at mealtimes. Wyler (23 cases) encountered it only after large doses, and cautions against giving solid diet. Demole reports a case of aspiration pneumonia consequent upon dysphagia. In the present series difficulty in swallowing was more apparent when solid or semi-solid foods were given; and in 5 cases the symptom was conspicuous. The complication is not a serious one if due care is taken with the feeding, and fluid diet given.

Other Nervous Disturbances.

Tremor of the hands and lips is common. Sympathetic and parasympathetic disorders are described by Meerloo. They consist of hyperidrosis,

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salivation and transient œdemas (Quincke). Excessive sweating was almost the rule in my cases, but salivation was only encountered once. In another case hiccup proved a somewhat troublesome symptom for two days, but subsided without requiring interruption of the narcosis.

Disturbance of Carbohydrate Metabolism.

Work on narcosis and oxidations of brain has recently been carried out in the laboratory of the Cardiff City Mental Hospital by Quastel and Wheatley (19). These authors demonstrated that narcotics did not influence the activation of oxygen by the brain-cell, nor did they affect the oxidation by the cell of certain substances which are freely oxidized by many cells which live aërobically. They did, however, exert a profound inhibitory action on the oxidation by the brain of substances important in carbohydrate metabolism, *viz.*, glucose, lactic acid and pyruvic acid, and at concentrations which were of the same order as those which give rise to deep narcosis in animals. Moreover, there was a definite parallelism between the inhibitive power on glucose oxidation of brain and the narcotic power of the drug. From this it follows that, when a narcotic is taken up by the brain, the amount of energy available for the functional activity of the cells is thereby diminished and narcosis ensues. These observations led Quastel and Wheatley to the supposition that narcotics may exert their toxic effects in the organism by interfering with the carbohydrate metabolism of other organs—a view supported by experimental observations on liver oxidation in the presence of narcotics, and clinically by the fact that ketonuria is a frequent accompaniment of narcosis. Lately, experiments on heart muscle oxidations in the presence of narcotics have lent further support to this view.

Considering the extensive literature that has appeared since Kläsi's paper in 1922, it is remarkable that no mention has ever been made of this specific metabolic disturbance. Before the present investigation was undertaken about 50 cases had been treated with somnifaine in this hospital by other workers. It was then noticed that in patients who were well under the influence of the narcotic there was frequently a strong acetone odour from the breath. This fact led to the discovery of ketone bodies in their urine, and subsequent observations showed that a large majority of patients undergoing prolonged narcosis (about 70%) developed ketosis at some stage or other. In this connection it is interesting to note that Gjessing and Lingjaerde record a case in which the smell of acetone was perceptible in the breath on the fifth day of treatment; the urine was not examined, however, and no particular significance was attached to this isolated observation. The condition is well known, of course, after ether anæsthesia, and may be associated with other toxic symptoms, such as vomiting, rapid pulse or coma (*vide* recent paper by Minnitt (20). The cause of the ketosis is undoubtedly the same in both instances; in surgical

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anæsthesia the narcotic acts much more intensely, but over a comparatively short period, this being sufficient for it to upset carbohydrate metabolism; with prolonged narcosis, on the other hand, the action is less intense, but drawn over a longer period, and the result is identical. Whether the fundamental disturbance is hepatic, nervous or pancreatic in origin is a problem which requires further elucidation. Either a diminution in the secretion of insulin results from a toxic action of the drug on the islets of Langerhans, or a greater amount of insulin is required by the tissue-cells, poisoned as they are with the narcotic, in order that glucose may be oxidized.

The importance of this may now readily be understood in connection with the functioning of such an organ as the heart. Physiology teaches us that the energy for cardiac contraction is supplied by the breakdown of glycogen into sugar, and sugar into lactic acid, a large part of the latter being then reconverted into glycogen. Moreover, it has been shown by Hepburn and Latchford (21) that adding insulin to the perfusate increases glycogen utilization threefold in the isolated perfused heart of the rabbit; and with regard to the human diabetic heart, Cruickshank and Patterson (22) demonstrated that glycogen utilization was only half that of the normal heart. It follows, therefore, that with the insufficiency of available insulin and inhibition of glucose oxidation that takes place during narcosis, the nutrition of the heart may be seriously impaired, and consequently the amount of energy available for contraction considerably diminished. That cardiac complications are frequent during somnifaine narcosis is admitted by all authors on the subject, and any affection of the myocardium is always regarded as a contra-indication to treatment. Müller and Meerloo are inclined to ascribe the circulatory disturbances to an action on the central nervous system, but Oberholzer argues for a direct action on the cardio-vascular system, quoting the frequency in his cases of tachycardia, feeble pulse and even extrasystoles. A medullary or sympathetic action cannot, of course, be excluded, but it seems probable that a toxic action on the heart muscle is by far the more important factor of the two.

In the earlier part of this investigation I carried out the treatment in much the same way as previous observers, and found that out of 20 narcoses (on 19 patients) ketonuria developed in 14, *i. e.*, in 70%. The time of appearance of ketosis in this group varied greatly from patient to patient; in one case it occurred within twenty-four hours of the commencement of treatment, whilst in another it was delayed until the ninth day, the average being four days. The amount of ketone bodies present in the urine also differs considerably from one case to another, and it may be quite appreciable when ketosis is early. Ketonuria, indeed, is only the outward sign of the specific metabolic disturbance, and the readiness with which ketone bodies appear in the urine must depend firstly on individual differences in the degrees of sensitivity to somnifaine of the mechanisms concerned in carbohydrate metabolism, and secondly, on the facility with which the kidneys excrete these substances,

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impaired renal function being comparatively common during narcosis. This is borne out, in fact, by clinical experience. Most observers agree that certain patients exhibit idiosyncrasy to the drug, and react after comparatively small quantities with dangerous symptoms. It was especially in this type of case I found ketosis to be early and severe. On the other hand, serious intoxication may be present, with only a moderate degree of ketonuria. Thus, while this symptom should be regarded as a danger-signal, its absence must not give rise to a false sense of security.

Pyrexia.

Pyrexia is a frequent complication mentioned by all authors. As a rule a physical examination at the time of fever proves negative, and the explanation usually given is that somnifaine affects the heat-regulating centre specifically, *i.e.*, depresses its function. This is borne out by the increased heat loss which often takes place and the liability of these patients to chills (Kläsi). Meerloo, who made a special investigation of the pyrexia, concluded that—

(*a*) Fluctuations of the temperature are not dependent on the degree of narcosis;

(*b*) Irregularities of the temperature curve are seen not only during narcosis, but also afterwards; one finds sudden elevations of temperature even as long as three weeks after termination of treatment.

(*c*) Subnormal temperatures occur just as frequently as pyrexia, but are specially prominent in catatonia and confusional cases.

(*d*) Characteristic diurnal and nocturnal variations are not seen.

Kläsi's dogmatic statement that pyrexia should be regarded as an indication for the immediate cessation of treatment does not find support with later writers. In 138 somnifaine narcoses, Oberholzer was forced to cut short treatment in 22, 5 of these having fever; on the other hand, in his completed narcoses, a pyrexia of 99·5° F. or over occurred in 20 cases without other complications. He concludes that a temperature elevation *per se* is not a contra-indication, and as an example, reports that in one of his cases, the temperature rose on the second day to 103·6° F.; he ventured, however, to continue with the drug, and in a day or two the temperature had fallen to normal. He is inclined to believe that pyrexia is commonest between the third and fifth day of narcosis, at a time when diuresis is at its lowest and other toxic symptoms are likely to appear; it rarely exceeds 100·4° F. (38° C.), except when associated wiht symptoms of collapse, and there is general agreement that a temporary stoppage of the drug suffices to bring it down.

In the present series of cases, pyrexia was noted in 11 treatments. In 6 of these it appeared on or after the sixth day. The temperature ranged between 99° and 101·8° F., and was of no special significance except in 2 cases where in coincided with symptoms of collapse. In the absence of other complications, I did not find it necessary to interrupt the treatment when

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the temperature lay between 99° and 100° F. With a rise to 100° or over it sufficed to discontinue the drug for twelve to twenty-four hours. The fever has all the appearances of a specific central effect of the narcotic, for in no patients, with the exception of the two mentioned, could any physical cause be discovered. The observations made on these cases appear to agree with Meerloo's findings, except that in catatonia a tendency to subnormal temperatures was not seen. In one patient pyrexia was first noted on the last day of treatment, and showed irregular remissions for a period of nine days; it was accompanied by a scarlatiniform rash, but other physical signs were absent.

The conclusion to be drawn is that, whilst the occurrence of pyrexia during somnifaine narcosis can be expected in roughly 25% of cases, the elevations of temperature are rarely high, and apparently have no particular clinical significance unless associated with other complications.

Circulatory Disturbances.

A general lowering of blood-pressure occurs during somnifaine narcosis—a fact commented upon by the early observers. Gjessing and Lingjaerde found an average drop of 20–30 mm. in the systolic pressure, and Müller came to a similar conclusion. Hediger and Kläsi (23) report a full in blood-pressure and slowing of the pulse immediately after intravenous injection of somnifaine, and attribute this to a dilatation of the peripheral vessels through a direct action, though Müller and Meerloo are inclined to regard it as of medullary origin. In the 5 cases where the blood-pressure was systematically measured I found an average fall of 14 mm. in the systolic pressure; but when collapse supervened the fall was undoubtedly greater. The drop occurs as soon as the patient is under the influence of the narcotic, and is maintained at the lower level as long as narcosis lasts, to be followed by a rise to normal within twenty-four to forty-eight hours after cessation of treatment. It is not unreasonable to suppose that the condition may be due to two different effects of the drug, the one a direct toxic action on the cardiac muscle, and possibly the arterioles, the other a paralysis of the vasomotor centre in the medulla.

A syndrome which may be encountered in the early stages of somnifaine narcosis is a collapse characterized by pyrexia, deep sleep (sopor), rapid, feeble pulse, vomiting, cyanosis, shallow respiration and oliguria. It is regarded by most authors as evidence of poisoning by somnifaine. The symptoms are of an alarming character, and the condition in some instances terminates fatally. Müller met with it in 5 out of 24 cases, and the incidence with other authors is much the same. In Furrer's series collapse always occurred on the second or third day of treatment—a fact also noted by other observers. Moser reports a case of collapse after the first injection (4 c.c.), and Müller regards the third day as "critical", after which the danger lessens.

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The condition is regarded as due to a cumulative action of the drug (Furrer, Müller), and in the opinion of Oberholzer it is the cardio-vascular system that is chiefly affected, as witnessed by the marked fall of blood-pressure and the rapid, feeble pulse. The last author denies the possibility of a cumulative action, as he thinks the danger is brought about by the sudden flooding of the circulation with a large quantity of narcotic.

In two patients of the present series symptoms of collapse developed. In one case of schizophrenia the condition set in on the third day after he had had a total of 10 c.c. somnifaine. The symptoms consisted of pyrexia (99·2°) marked drowsiness, weak pulse, persistent vomiting, profuse sweating, oliguria and retention of urine, which contained a large amount of ketone bodies. The leucocytes numbered 11,000. In another schizophrenic collapse occurred on the fourth day, with pyrexia of 101·8°, a feeble pulse of 100, slight cyanosis, extreme drowsiness, marked difficulty in swallowing and oliguria. Catheterization proved necessary, and the urine was found to contain ketone bodies. The white cell-count on the following day was 31,000. Fortunately these two cases cleared up in a day or two after stopping the administration of the narcotic, and without any special active treatment.

It is noteworthy that in the two patients mentioned ketonuria was very marked; and since the introduction of glucose-insulin administration I have not so far met with any symptoms of collapse in my cases. I am inclined to agree with Oberholzer that the condition is not due to any cumulative action, but rather depends on individual sensitiveness to the drug. Thus the first case mentioned, after an interval of three weeks, commenced a second course of somnifaine treatment and again developed symptoms of collapse on the second day, this being with smaller amounts of the drug than would have been given to another patient (this patient did not have glucose-insulin). Moreover, in 3 patients who were treated for fourteen days with an average of 6 c.c. per day throughout, and in whom one would have expected a cumulative action, there did not at any time appear signs of collapse.

Respiratory Symptoms.

During narcosis the respirations become shallow and mucus tends to collect in the bronchial tubes, owing probably to a slight diminution in the sensitivity of the cough reflex. The presence of bronchial infection, together with the decreased ventilation of the lungs, renders the danger of pneumonia a very real one. Thus, Dozy (24) reported 2 deaths from influenza during somnifaine narcosis in young, robust subjects; and in the present series 2 patients caught influenza during treatment, one of them eventually succumbing to broncho-pneumonia and pneumococcal septicæmia. With the respiratory system thus constituting a definite *locus minoris resistentiæ*, narcotic treatment should never be carried out when influenza is rife.

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Renal and Vesical Symptoms.

In the early stages there is a tendency to diminished secretion of urine. Stuurman and Demole report several instances of complete anuria within the first twenty-four to thirty-six hours. In the present series anuria was never encountered, but oliguria was noted at times, especially in the earlier cases and when symptoms of collapse supervened. Thus in one schizophrenic only 10 oz. of urine were secreted in the twenty-four hours between the third and fourth day; in another case the amount between the second and third day was 12 oz. The oliguria depends also to some extent on the nature of the diet. In my earlier cases, where solid food was given, oliguria was more frequent, whereas with an abundant fluid diet, such as was given to at least two-thirds of the cases, diuresis was usually well maintained throughout the course. Routine measurements of the urine output were not done, except in one patient, and here the amount did not at any time fall below 40 oz. per twenty-four hours. Oberholzer, who lays great stress on diminished urine secretion and considers it a major toxic symptom, succeeded in re-establishing diuresis by giving large quantities of fluid, either by the mouth or *per rectum*, and by diuretics, although in 4 of his cases where this proved unsuccessful the narcosis had to be cut short. It may be said that, *ceteris paribus*, the tendency to a diminished output of urine is noticeable in most patients who are well under the influence of the narcotic, and can only be ascribed to a toxic irritation of the kidneys by the somnifaine. This is borne out by the frequency of albuminuria, 14 of my cases having had this complication. The amount varied from a trace, in the majority of cases, to a large amount in 2 cases, as shown by a dense cloud in the heat coagulation test. The average time of appearance of albuminuria was the fourth day after commencement of treatment, the extremes being the first and twelfth day. No tendency was noticed for the albumen to increase in amount, and in none of these cases was the treatment interrupted. After cessation of narcosis the albuminuria usually disappeared in a day or two, and no ill-effects followed, one exception to this being noted (a case of catatonic stupor). That the condition is caused by a toxic irritation of the kidneys there can be no doubt (Bramson (25), Meerloo), and autopsy findings in fatal cases confirm this, hyperæmia of the kidneys being frequently revealed. Nevertheless, actual cases of nephritis following somnifaine narcosis are rare.

Retention of urine is a troublesome complication which cannot be avoided in prolonged narcosis. All authors have met with it in a large proportion of cases, and some have ascribed it to a derangement of the nervous mechanism of micturition, although occasionally it may be determined by psychological factors. Müller found catheterization necessary at some time or other in one third of his cases—a large figure. Oberholzer is of the opinion that retention is most frequently seen in cases with oliguria; but this is by no means the rule.

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Twelve of my patients developed retention and had to be catheterized. In 3 of these there was oliguria, whilst the remaining 9 secreted a large quantity. One patient was catheterized on three occasions, 4 on two occasions and the remainder only once. The time of appearance of this symptom was on an average the fifth day after beginning of the course, the earliest being the second day and the latest the twelfth day. Retention seems to develop more readily in those patients who are very deeply narcotized, and is apparently dependent on a paralysis of the nervous centres for micturition.

Changes in Blood Picture.

Wyler found an initial leucopenia followed on the third day by a leucocytosis, which, as a rule, lasted during the remainder of the course. On cessation of narcosis the picture returned to normal. He ascribes the change to a toxic action, akin to the effect produced by injection of a foreign body (*e.g.*, sulfosin, milk).

A special study of the leucocyte count was done in 22 cases before, during and after treatment, in 14 of these the count being done every day. An initial leucopenia could only be demonstrated in 2 patients, the white cells here falling to 4,400 and 3,500 respectively on the second day. In the remaining cases a leucocytosis set in either immediately or after one or two days. In general, the peak of the curve is reached on the fifth or sixth day, after which there is a tendency to fall until the end of the course. The count as a rule becomes normal within one or two days after termination of the treatment. The highest count noted was 31,000, the lowest 3,500. In 8 of the 14 cases the maximum leucocytosis coincided with the development of one or more bodily complications, such as collapse, ketosis, oliguria, pyrexia, etc. It was evident, however, that the leucocyte count could not be regarded as an index of the general toxicity of the drug, for in the remaining 6 cases the peak of the curve did not coincide with the development of toxic symptoms where such symptoms arose; indeed, in Case 24 a marked leucocytosis (23,200) occurred in the middle of the course without toxic symptoms appearing at any time.

From these investigations it would appear that—

(*a*) Leucocytosis is the rule during somnifaine narcosis.

(*b*) The leucocyte curve reaches its peak towards the middle of the course, after which it shows a tendency to fall.

(*c*) Leucocytosis is an expression of the specific effect of the drug on the hæmatopoietic system, and is independent of the toxic action on other organs.

(*d*) Wyler's claim of an invariable occurrence of leucopenia during the first two days of treatment cannot be substantiated, it being found in only 2 out of 14 cases in the present series.

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Changes in Blood Chemistry.

(a) *Blood sugar.*—Systematic blood sugar estimations were not undertaken in my series. From investigations made by other observers in this hospital, however, it was established that the fasting blood sugar rose and glucose tolerance diminished during prolonged narcosis. The hyperglycæmic index (McCowan and Quastel (26)) was found to be very high in all cases investigated. That glucose tolerance is lowered is further shown by the occurrence of glycosuria in a large proportion of my cases, even in those who received insulin and glucose. These observations serve to indicate from a clinical point of view the marked derangement of carbohydrate metabolism which results from the action of narcotics.

(b) *Blood urea.*—The fasting blood urea was estimated throughout the treatment in two cases. In the one, the value on the sixth day was 13·3 mgrm.% higher than the initial figure of 20·3 mgrm.% (obtained before narcosis). This rise was coincident with the development of oliguria and albuminuria, and as diuresis became established, the value fell on the thirteenth day to 25 mgrm.%, and on the fifteenth to 20 mgrm.%. In the second case the urine output remained satisfactory throughout, and the maximum deviation from the normal level was only 3 mgrm.%. These figures would appear to indicate that a transient rise in blood urea can be expected in cases developing oliguria; but when diuresis is well maintained, no nitrogen retention occurs.

(c) *Blood calcium.*—Fischer (27) and Cloetta (28), in extensive investigations in blood calcium, showed that during sleep and narcosis there is a fall of about 10% of the normal value. Glaser (29), working with cases of hysteria, found that excitement was coincident with an increase of blood calcium, whilst in hypnosis the value fell 20%. This disturbance of the calcium equilibrium in the blood, according to Fischer, probably originates in the diencephalon, but the fundamental nature of the phenomenon is still obscure.

In two cases (mania and melancholia) the blood calcium was determined before, during and after somnifaine treatment by the method of Kramer and Tisdall. In both cases the fall in blood calcium became specially marked after the fourth day and was maintained until the narcosis ceased. The maximum fall was 18% of the normal value—a figure somewhat higher than that found by Fischer and Cloetta. Although only two patients were investigated and the experimental error of the method is a comparatively large one, the consistent low values obtained after the fourth day of narcosis and the rise to normal after the end of the course are significant, and the results obtained in these two cases were so striking that they lend support to Fischer's theory of a disturbance of the Ca/K equilibrium of the blood in narcosis.

Miscellaneous Symptoms.

(a) *Somnifaine rash.*—Meerloo mentions the occasional occurrence of erythematous rashes during somnifaine narcosis, and attributes it to the action

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of the drug on the peripheral vessels. The incidence is probably small, the condition being only met with twice in the present series. In one case a profuse scarlatiniform eruption developed on the day after termination of treatment; it was confined to the trunk, the limbs and face remaining practically free. In three or four days it had completely faded. In a second case a rash developed on the tenth day of narcosis; here it was of an erythematous morbilliform type, confined chiefly to the trunk and to the root of the neck and becoming confluent in certain regions. During the succeeding four days it gradually disappeared.

(b) *Vomiting.*—This complication, usually encountered in the early part of the course, occurred in 10 treatments. Fortunately it was not severe enough in any of these to necessitate cutting short the narcosis. On the other hand, in Moser's cases it was one of the principal reasons for discontinuing treatment. Stuurman found it intractable, whereas Demole saw a prompt effect after atropine. Wyler met with it rarely, and Oberholzer saw it chiefly in connection with what he terms the "toxic syndrome", the main symptom of which was oliguria; he admits, however, that it may occur apart from this. The weight of evidence indicates that the symptom can be ascribed to a bulbar action of the drug.

(c) *Epileptiform convulsions.*—Epileptiform seizures were not encountered in the present series, although they occurred in a previous series of cases investigated at this hospital. Other authors report the occurrence of this complication. It is specially apt to make its appearance after cessation of narcosis, though in some cases it was found to occur during the course (Lutz (30), Schmidt (31), Meerloo). Meerloo met with it in 6 cases, and makes a comparison with the danger of luminal in epilepsy, where the sudden withdrawal of the drug may be followed by *status epilepticus*. The fits are said to have no serious effects, and it is possible that they are causally related to the hyperæmia of the brain and meninges which from autopsies in fatal cases of somnifaine narcosis we know takes place (Furrer, Gruber and Roberts (32), Moser).

Contra-Indications to Prolonged Narcosis.

The physical contra-indications for treatment can be fairly well defined. Three conditions were mentioned by Kläsi: marasmus, cardiac weakness and renal affections. Treatment should not be undertaken in toxic and emaciated cases, for most of the deaths reported in the literature belong to this type. Bleuler (33), on the other hand, asserts that patients gain weight during narcosis, and treats marasmic cases wherever benefit can be expected. With regard to cardiac affections, it is generally agreed (Dozy, Oberholzer) that patients with well-compensated valvular disease stand narcosis as well as healthy persons; if myocardial degeneration and arteriosclerosis exist,

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however, the treatment is undertaken at great risk owing to the danger of circulatory collapse. The reason for this will be readily understood if one bears in mind to what extent the heart muscle must suffer through the disordered carbohydrate metabolism (*vide supra*). When renal disease is present it again depends largely on the degree of involvement whether somnifaine should be given or not. Dozy treated successfully a case with chronic nephritis. On the whole this disease should be regarded as a contra-indication, owing to the risk of further renal damage being done through the irritation of the drug. In the present series, a man, æt. 59, with moderate arteriosclerosis and slight albuminuria, but with a normal urea-concentrating power, underwent a course of treatment without apparent deleterious effects. He made a good recovery from his psychosis. Oberholzer lays great stress on excluding patients with bronchial or other respiratory affections and, as mentioned above, influenzal infection probably constitutes the chief danger. Müller goes so far as to exclude any case with organic diseases on the *a priori* grounds that it is aggravated by the narcosis, but apart from the conditions enumerated in the foregoing, the question of contra-indication must be considered on the merits of each individual case.

Mortality.

Out of the 311 cases that Müller collected from the literature (including his own series), there were 15 deaths attributed directly or indirectly to somnifaine intoxication, representing a mortality of nearly 5%. Kläsi reported 3 deaths in 26 cases, Müller 2 in 24, Furrer 2 in 22, Wyler 3 in 23, Dozy 3 in 148, whereas in 50 cases reported by Stuurman and 92 by Oberholzer no fatalities occurred. In the present series of 40 cases there was no fatal issue which could be attributed to the narcotic, although one patient contracted influenza at the termination of the course and died a fortnight later of pneumonia.

Müller considered the mode of death under three different categories:

(1) Cases with the appearance of acute cardiac failure, usually in association with collapse. Death takes place early in the course and autopsy findings are scanty.

(2) Cases succumbing to respiratory disease. The shallow breathing predisposes to hypostatic congestion and pneumonia.

(3) Miscellaneous causes, such as sinus thrombosis, nephritis, etc.

The greater number of fatalities belong to group 1, which would seem to present true instances of somnifaine intoxication. It would appear that death from intoxication is pre-eminently a cardio-vascular catastrophe, to which a paralysis of the medullary centres probably contributes, whereas the respiratory catastrophes are secondary and due to a lowering of resistance against infection. From a biochemical standpoint the cardio-vascular involvement, as has already

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been pointed out, seems to be dependent on the specific disturbance of the carbohydrate metabolism in the heart muscle brought about by the narcotic.

Management and Technique.

(a) *General.*

On the morning of commencement of treatment the patient is put to bed in a quiet ward, or preferably a single room in the observation ward. A physical examination is made and subsequently an enema given. Intelligent co-operation of the nursing staff is essential, and it is a definite advantage to have the patients nursed by a staff that has had experience in the management of prolonged narcosis. Measures must be taken to ensure quietness. Specimens of urine are collected daily by the staff and dispatched to the laboratory for examination. It is essential that such specimens should be as fresh as possible owing to the importance of detecting acetone bodies, and for this purpose a morning specimen has been found quite satisfactory.

The diet throughout the course should be entirely fluid. The reasons for this are obvious: firstly, the feeding is easier with fluids, and if dysphagia be present, the giving of a solid diet becomes dangerous owing to the risk of choking and aspiration pneumonia. Secondly, it is important to maintain a good diuresis, and this is best effected by giving abundant fluids. Milk, custard and lemon-water form the chief articles of diet, and 1 to 1½ oz. of glucose should be added to practically every feed. Beef tea or bovril may be given as a change, but stimulating drinks like tea or coffee should be avoided. The meal-times are not fixed, but food is given during any interval when the patients are awake—often once during the night. With such a dietary arrangement it has been found that patients maintain their body weight remarkably well. Tube-feeding may be necessary, chiefly on account of diminished appetite or positive loathing of food. Three cases of the present series required it on two or three occasions for this reason. If insulin has been given, it is, of course, essential to resort to tube-feeding in case of refusal of food, otherwise one runs the risk of a hypoglycæmic reaction.

(b) *Technique and Dosage.*

The original technique of Kläsi was to commence treatment with a preliminary injection of morphine and hyoscine, followed in half to one hour's time by a subcutaneous injection of 4 c.c. somnifaine. By this means a deep sleep would be ensured from the very beginning, and it was asserted that if the preliminary morphine-hyoscine were omitted the patient became restless, or experienced nausea and vomited. This initial procedure seems to have been adopted by most workers since Kläsi. Stuurman, however, condemned the use of morphine and hyoscine, and experienced no difficulty in inducing

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narcosis from the commencement. Furrer gave hyoscine, but omitted morphine on the grounds that the latter enhanced the risk of early complications. In the writer's opinion this preliminary injection may be dispensed with in a large proportion of cases. In patients showing apprehension, agitation or excitement, an initial dose of hyoscine proved very beneficial in allaying fear and psychomotor unrest.

Reference has already been made to the method of administration. Originally the drug was given subcutaneously, but this method had to be abandoned owing to the troublesome inflammatory infiltrations which at times supervened. Wyler employed the intravenous method, but thrombosis and embolism frequently resulted. The intramuscular route is undoubtedly the best, and was used in all my cases. The muscles of the lateral side of the thigh proved the most convenient site for injection, and local complications were not met with.

Opinions differ somewhat widely on the question of dosage. Kläsi was non-committal; after the initial 4 c.c., his average dosage appears to have been 2 c.c. twice or thrice daily, and he regarded 8 c.c. in twenty-four hours as hazardous. Furrer obtained sufficient narcosis with 4 c.c. daily, but he allowed a maximum dose of 10 c.c. Demole thought a large dose, such as 8 c.c. *per diem*, could be well tolerated for a day or two, but adds, "Il est dangereux d'injecter plusieurs jours de suite plus de 5 c.c. de somnifène". Oberholzer gave 2 c.c. once to four times daily according to the nature of the case and depth of narcosis required, and he warns against injecting at fixed times. The procedure adopted in the present series was to commence treatment with a dose of 2 c.c., which proved quite sufficient to induce sleep. From then on an average of 5 to 6 c.c. in twenty-four hours were administered to subjects in robust health—a quantity which was adequate for the production of a fairly deep narcosis. Injection at regular intervals is not advocated; indeed, such a practice would be impossible, because the reaction of each individual to the drug is so variable. Some persons require comparatively small doses of somnifaine and sleep well the greater part of the time, or they may develop toxic symptoms after only a few injections; others require larger quantities to induce a satisfactory narcosis, and despite this may remain practically free from complications. Constant observation is necessary, and the dosage must largely depend on the amount of sleep obtained and the physical condition of the patient. Restless and excited patients, as a rule, require bigger doses than quiet and co-operative ones; in fact, in some cases it may be impossible to induce a satisfactory narcosis at all. In such instances it is advisable to cut short the treatment rather than to continue injecting large quantities of the drug. No hard and fast rule can be laid down about maximum dosage, this depending to a great extent on individual sensitiveness, but more than 8 c.c. in twenty-four hours must be regarded as dangerous, although the writer has given 10 c.c. without apparent ill-effect.

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(c) *Glucose-insulin Administration.*

The chief objection to the narcotic treatment ever since its inception has been the occurrence of toxic symptoms during the course, which frequently called for an immediate discontinuation of the drug. These symptoms were generally referred to an action of the somnifaine on the brain or cardio-vascular system, but the fundamental nature of this action remained unexplained. As has been stated above, the carbohydrate metabolism of the brain and other vital organs, such as the heart and liver, is profoundly disturbed by the presence of narcotics, and the disturbance consists of an inhibition of oxidation by these organs of such substances as glucose and lactic acid. This discovery led to the possibility of attempting a rational treatment and prevention of toxic symptoms by administering insulin and glucose to patients undergoing somnifaine therapy. A preliminary note on an experimental investigation carried out on 20 patients has already been published (Quastel and Ström-Olsen (34)), and in this it was shown that by means of the above modification, ketosis, which can be regarded as a measure of disturbed carbohydrate metabolism, could be entirely eliminated. Further work in the present series of cases has substantiated this view.

The 46 treatments which were carried out on the 40 patients may be subdivided into three groups :

(1) Fourteen in which glucose and insulin were not given.

(2) Fifteen in which glucose and insulin were administered immediately on the appearance of ketonuria or other toxic symptoms.

(3) Seventeen where glucose and insulin were given from the very beginning.

In group 1 ketonuria developed in 6 instances and narcosis had to be cut short in 5, 2 on account of circulatory collapse, 3 because of marked ketosis, drowsiness and vomiting. Of the remaining 8 treatments, 4 proceeded normally, whilst in the other 4 smaller quantities of somnifaine were given to avoid complications This method was therefore very unsatisfactory, as only 4 out of 14 treatments were complete and 5 had to be prematurely stopped.

In 12 out of 15 treatments in group 2 ketonuria developed, whilst in the remaining 3 other toxic symptoms supervened. As soon as ketonuria appeared 5 to 15 units of insulin were given with the next dose of somnifaine, followed by the ingestion of 1 to 1½ oz. of glucose. The optimum dose of insulin varied from one individual to another. In some, 5 units twice daily sufficed, whereas in others ketonuria reappeared after a few days on this dose. For this reason it was found advisable to adopt as the standard dose 10 units for each 2 c.c. of somnifaine, although a larger quantity may sometimes be required. The following table is illustrative of the effect of glucose-insulin therapy on the disappearance of ketosis :

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Case No.	Day of appearance of ketonuria after commencement of narcosis.	Acetone bodies in urine (Rothera test).	Day of first administration of glucose-insulin.	Result on ketonuria.
1	5th	++	5th	*Nil* on 6th day.*
12	6th	++	6th	Trace on 7th day; *nil* on 8th day.*
14	4th	+++	4th	Trace on 5th day; *nil* on 6th day.*
15	3rd	+	7th	Trace on 8th day; *nil* on 9th day.*
16	7th	++	8th	*Nil* on 9th day.*
18	7th	+	7th	,, 7th day.*
21	7th	++	8th	,, 9th day.*
23	2nd	++	2nd	,, 3rd day.*
26	4th	+	4th	,, 5th day.*
27	4th	+++	4th	Trace on 5th day; trace on 6th day; *nil* on 7th day.*
28	3rd	+	3rd	*Nil* on 4th day.*
28 (second course)	4th	+	4th	,, 5th day.*

* And on subsequent days of treatment.

In the remaining 3 cases of group 2 no ketonuria was evident, but other toxic symptoms developed. Thus one patient received glucose-insulin from the eighth day on account of pyrexia (101° F.), rapid, feeble pulse and a leucocytosis of 19,000; a second received glucose-insulin from the fourth day because of slight pyrexia and weak pulse; in the third case glucose and insulin were given from the third day after he had developed a slight degree of circulatory collapse. In none of these cases did treatment have to be cut short.

In group 3 insulin and glucose were administered from the beginning of the course and tolerably large doses of somnifaine were given throughout. None of the 17 cases thus treated developed ketonuria, except Case 32, in which it appeared on the sixth day. In this patient insulin was increased from 20 to 30 units daily, and the immediate effect was the entire disappearance of ketosis during the remainder of the course. These patients remained singularly free from alarming symptoms, especially circulatory collapse, and in no instance was narcosis prematurely discontinued. Of other toxic symptoms which remained in abeyance I would mention extreme drowsiness, cyanosis, coldness of the extremities and vomiting. On the other hand, insulin seems to have no effect in preventing pyrexia, oliguria, albuminuria and leucocytosis, for these symptoms occurred with equal frequency in all the three groups.

(c) *Duration.*

In Kläsi's original series the average duration of narcosis was five to seven days, and several of the later workers adhered to this rule. It is apparent, however, both from opinions expressed in the literature and from experience gained in the present investigation, that in the majority of cases a longer

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period is required. Furrer advised seven to eight days, Wyler eight to ten days and Demole up to twenty-seven days. Oberholzer gives the optimum duration as ten days, whereas Stuurman is emphatic that the treatment should last a minimum of fourteen days. The length of narcosis aimed at in the present series was twelve to fourteen days, this being prolonged to sixteen days in two or three cases. Most authors agree that some patients in whom treatment had to be interrupted owing to complications showed as much improvement as could be expected from a more protracted course. Wyler reports that in manic-depressive psychosis treatment may with advantage be shortened to a few days. This has also been the writer's experience in two cases; thus, in a case of mania, three courses of treatment were given corresponding with maniacal relapses; the duration of the first two was fifteen and fourteen days respectively, of the third only six days, but the third course was equally successful in cutting short the attack as the other two. A case of involutional melancholia received a fortnight's treatment, but by the fourth day his mental state had already improved considerably. In schizophrenia, severe forms of mania and melancholia and in the neuroses a longer period is undoubtedly required.

Indications for Stopping Treatment.

A study of the symptomatology of somnifaine narcosis has already revealed that it is highly important to cut short narcosis before dangerous complications supervene. This necessitates frequent and careful observation of the patient in order to detect the premonitory signs of serious intoxication. When this rule is observed any interruption in treatment is likely only to be a temporary one. Amongst the patients in whom insulin and glucose were administered during the course, serious complications did not occur in a single case, whereas in those treated without this measure they were frequently seen. The following are conditions necessitating an immediate stoppage of the drug, whether temporary or permanent:

(1) *Tachycardia* with fall of more than 25 mm. in the systolic blood-pressure; premonitory of circulatory collapse.

(2) *Ketonuria.*—This would be an indication to start glucose-insulin administration or to increase the dose of insulin, where such treatment had already been given; the continuation of narcosis would otherwise almost certainly lead to dangerous complications.

(3) *Pyrexia over* 100° *F.*, in which case stopping the drug for 6 to 12 hours usually suffices.

(4) *Persistent vomiting.*—Experience has shown that in such cases ketosis and other toxic symptoms readily supervene if narcosis is not discontinued.

(5) *Dusky complexion, shallow breathing* and *extreme drowsiness.*

(6) If *respiratory infection* (influenza) should break out in the ward.

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In most of these instances narcosis need only be interrupted temporarily, and when it is re-started glucose-insulin should be given in addition. So far it has not been found necessary to cut short treatment on account of albuminuria, oliguria or a pyrexia below 100° F. In cases where a moderate albuminuria occurred during the greater part of the course, post-hypnotic renal complications never developed, the albuminuria generally subsiding within a week. Oliguria is usually a temporary symptom, and can often be prevented by giving large quantities of fluid.

Summary.

1. Hitherto somnifaine treatment has been regarded as an imperfect form of therapy in mental disorder owing to the toxic risks, which frequently required the treatment to be stopped before any alleviation of the mental illness could take place. The mortality in a large series of cases collected by Müller was 5%. These serious drawbacks have tended to bring the narcotic treatment into disrepute. The fact, however, that by prolonged narcosis we are able to allay psychotic symptoms not only temporarily, but often permanently, is in itself such an advance that it warranted a search for modified methods of narcosis, which would diminish or abolish toxicity. In this paper a modification of technique has been described, by which it is possible to eliminate dangerous toxic manifestations of somnifaine narcosis.

2. Toxic symptoms which frequently accompany the narcosis have been fully discussed and their significance pointed out. Of these the most important are ketosis, with diminished glucose tolerance, fall of blood-pressure, tachycardia, circulatory collapse, oliguria, albuminuria, disturbances of co-ordination, including difficulty in swallowing, pyrexia and skin-eruptions of an erythematous type. Other changes to be noted are leucocytosis, fall in blood-calcium and slight rise in the blood-urea. Epileptiform convulsions did not occur in the present series.

3. A disturbance of the carbohydrate metabolism of vital organs occurs during prolonged narcosis with somnifaine—a fact which has not previously been recorded in the literature. Clinical evidence of this is seen in the frequent development of ketonuria, which at this hospital has always been regarded as a contra-indication for further treatment. *In vitro* experiments by other workers in the hospital have shown that narcotics inhibit the oxidation by the brain, liver and heart of substances such as glucose and lactic acid, which are important in carbohydrate metabolism, the inhibitions being much greater with the brain than with other organs. Ketonuria is the outward manifestation of this disturbance, but it is claimed that other symptoms, such as circulatory collapse, can be ascribed to the same fundamental cause.

4. The knowledge that carbohydrate metabolism was affected by narcotics led to the adoption of the administration of insulin and glucose during narcosis

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with a view to eliminating dangerous symptoms. Of 46 treatments on 40 patients, 14 were carried out without this additional measure, and narcosis had to be prematurely stopped in 5, 4 others being continued with smaller doses. In 15 treatments, insulin and glucose were given on the appearance of ketonuria and major toxic symptoms, with the result that these manifestations entirely disappeared within forty-eight hours. In 17 instances where insulin and glucose were administered from the very beginning no ketosis or other serious complications arose. These results demonstrate that the narcotic treatment has been rendered perfectly safe by means of the modification described.

5. Myocardial degeneration, arteriosclerosis, marasmus and respiratory disorders constitute the chief physical contra-indications for somnifaine treatment.

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THE FACTOR OF HYPOGLYCÆMIA IN THE ÆTIOLOGY OF IDIOPATHIC EPILEPSY.*

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In the whole realm of medicine there are few more easily recognizable clinical syndromes than those which have been grouped together under the generic term of "epilepsy" or "epileptiform convulsions"; nevertheless, in spite of a vast amount of research work, the causation of these conditions is still imperfectly understood.

The most widely accepted theory at present is that which supposes the condition to be due to a "metabolic dyscrasia" (Collier (1)). The literature bearing on this view was summarized in a previous paper (2).

Considerable support has been given in this country (3), and on the Continent (4), to the suggestion that fits might be related to spasmophilia and parathyroid tetany, but examination of the blood of epileptics has failed to demonstrate any abnormality in the level of the blood calcium (5, 6, 7).

Hughlings Jackson (8) considered epileptic fits to be due to localized instability of the cerebral grey matter, and thought that this instability might be due to abnormal nutrition of the affected part. Russell (9) held that all epileptic fits were due to localized cerebral anæmia, and Shaw (10), working from an entirely different aspect, came to the same conclusion. Similar views have been reported by Hodskins *et al.* (11), and Tracey (12), who considered the anæmia to be due to faulty vaso-motor control. Kennedy (13), from the surgical aspect, supports this view, and states that when a fit occurs during intracranial operations, definite blanching of the exposed brain-tissue can be observed. The fact that beneficial therapeutic results have been reported in epilepsy by treatment with caffeine (14, 15, 16) and luminal might be said to support this view, for both these drugs are stated to dilate the cerebral blood-vessels, and thus give an increased circulation to the brain (17).

Many observers consider that epilepsy may be due to an upset in the endocrine balance, and the fact that fits are liable to start in infancy, in adolescence and at the menopause is in favour of this view, for at these periods of life there is often a definite derangement in the endocrine balance. A similar state of affairs exists in pregnancy, as shown by Turnbull (18) and others, and

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may account for the sudden onset or equally sudden cessation of fits described by Collier (1, 19) as occurring sometimes in pregnant women; similarly the milder endocrine disharmony which occurs at the onset of menstruation may account for the excessive number of fits described by Turner (20), as appearing at this period.

There is no endocrine which has not been implicated as being responsible for epilepsy. Pituitary lesions have been reported by many observers; thus Zabreski (21) reports acromegalic tendencies in epileptics, and Barros (22) states that epilepsy is a common symptom in this condition. Schön and Susman (23) and Vizioli (24) have reported that the pituitary gland of epileptics is hypertrophied. On the other hand, Tucker (25) reported hypopituitarism in 31% of the epileptics he examined, and obtained improvement in their condition by feeding with extract of the whole gland. Cushing (26) described epileptiform symptoms in undoubted cases of deficient pituitary secretion. Various observers have reported macroscopic and microscopic abnormalities in the parathyroid (23, 27). The adrenals have been stated to be abnormal; the pancreas has been described as hypertrophied (28), and within the last five years liver deficiency has been demonstrated by Widal (29, 30) and Worster-Drought (31) using the hæmoclastic function test, and by Gosden and Fox (32) by the lævulose tolerance test, while Patterson and Weingrow (33) state that they found the general average of liver weights to be below the accepted normal minimum. Thyroid lesions have been described, though Notkin (34) reported normal basal metabolic rates in epileptics and Lennox and Wright (35) failed to find any gross abnormality in either direction in the basal metabolism of 130 cases they examined. Normal figures were also reported in 50 cases by Davis (36). Twenty-four cases in which the basal metabolic rates were calculated here by Reid's formula (37) gave values within the normal limits.

Abnormalities in the autonomic nervous system have from time to time been suggested as important ætiological factors in epilepsy, and this view has recently been revived by Tracey (38) and Loewy (39). Attempts to stop the fits by removal of cervical sympathetic ganglia were made some years ago by Alexander in Edinburgh (40) and Jacobet in America (41), but both of these failed to obtain any beneficial results from their operations. More recently Santenoise *et al.* (42) have suggested that the condition of epilepsy is associated with excessive vagotonia, and support is given to this view by the good therapeutic results obtained by Damaye (43) by the administration of atropine.

Epileptiform fits are liable to occur in a number of varied conditions. They are seen in localized cerebral irritations, in general paralysis of the insane, in general toxæmias, such as acute fevers, in diabetes, or uræmia, and when the blood-supply of the brain is deficient, as in Stokes-Adams's syndrome, or advanced myocarditis, or when potassium iodide solution is injected into the carotid arteries for radiographical purposes (44). They may also be produced

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artificially by pressure on the carotids or slowing the heart artificially by vagal stimulation. The fits observed by Marshall Hall (45) and others after severe hæmorrhage in warm-blooded animals were probably due to the same cause, and also since Collier (1) states that fits cannot be due to tissue irritation, it is reasonable to suppose that the fits observed in over 30% of cases of cerebral tumours (46) are due to the increased intracranial pressure interfering with the circulation of the brain; and further, in view of Sargent's (47) statement that traumatic epilepsy is due to adhesions, it is more than likely that the convulsions in this condition are due to a local anæmia of the cerebral tissue.

The effect of an anæmia of the brain is to deprive the nerve-cells both of oxygen and of nutriment in the form of glucose. Anoxæmia alone does not give rise to convulsions, as has been shown by the work of Barcroft and Haldane, and the convulsions observed in asphyxia are only grossly exaggerated respiratory movements due to the rise of carbon dioxide pressure in the blood. The factor, then, which is responsible for the irritation of the brain in cerebral anæmia is probably the absence of blood glucose; for the fact that lack of a sufficient glucose supply to the brain can give rise by itself to epileptiform symptoms is known from the work of Banting, Campbell and Fletcher (48), and many others (49, 50, 51), who report that symptoms indistinguishable from *petit* and *grand mal* can occur in hypoglycæmia produced by insulin injection.

In view of these facts it was decided to investigate the blood-sugar values of a series of epileptics to find whether hypoglycæmia could not be the causative factor in idiopathic epilepsy. It seemed peculiar that although abnormalities in both directions of activity are known to exist in the thyroid and pituitary glands, until the last few years only hypofunction of the islets of Langerhans has been described. From theoretical considerations a hyper-activity of the islet tissues should produce identical symptoms as those seen when insulin is injected into a healthy subject. As shown above, the results produced can be indistinguishable from idiopathic epilepsy, the nervous instability, "epileptic" cry, and complete lack of memory for the occurrence of the fit, all being present. Further, John (52) has stated that hyperinsulinism gives rise to great hunger—which, in my experience, is a marked characteristic in chronic epileptics.

For the purpose of investigation, all the epileptics in the hospital were taken irrespective of the number, the severity, or the duration of their fits. An attempt was made to collect specimens of blood, immediately before the fit, in the fit, and directly after, but this was found to be impossible, as none of the cases under examination had sufficiently long prodromal symptoms to permit withdrawal of specimens before the fits, and during the fits the convulsions were too violent to permit withdrawal of blood. Specimens could have been obtained after the fit, but these were considered unnecessary, as Olmstead and Logan (53) and others have shown that convulsions raise the blood-sugar, and

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Kersten (54, 55) has shown that this occurs in epilepsy, the mechanism being a stimulation of the suprarenals by the muscular excitement, with consequent outpouring of adrenaline and mobilization of liver glycogen (56).

The first series of examinations consisted in estimating the fasting blood-sugar levels of those epileptics in the hospital who were under no medical or dietetic treatment, and were still liable to fits. The blood specimens were withdrawn by veni-puncture, and their glucose estimated by the method of E. G. B. Calvert (57). The blood analysis was started as soon as possible after withdrawal to prevent there being loss of sugar from glycolysis, and throughout the investigations standard glucose solutions were estimated and normal blood specimens examined to exclude any experimental error.

The complete results obtained by 124 examinations in 80 patients are shown in Table I.

The average fasting sugar value from these results is 84·9 mgrm. %. Different

TABLE I.—*Fasting Blood sugars in mgrm. % in Untreated Epileptics.*

1	.	99	28	.	103	55	.	81
2	.	74	29	.	105	56	.	60
3	.	104	30	.	80	57	.	81
4	.	93	31	.	87	58	.	99
5	.	86	32	.	66	59	.	68
6	.	89	33	.	91	60	.	60
7	.	73	34	.	86	61	.	76
8	.	94	35	.	84	62	.	101
9	.	91	36	.	109	63	.	87
10	.	77	37	.	85	64	.	104
11	.	78	38	.	81	65	.	79
12	.	94	39	.	90	66	.	80
13	.	67	40	.	57	67	.	78
14	.	100	41	.	86	68	.	79
15	.	79	42	.	92	69	.	106
16	.	92	43	.	98	70	.	72
17	.	73	44	.	82	71	.	78
18	.	89	45	.	91	72	.	108
19	.	102	46	.	86	73	.	103
20	.	73	47	.	68	74	.	84
21	.	82	48	.	87	75	.	80
22	.	94	49	.	84	76	.	93
23	.	82	50	.	90	77	.	79
24	.	63	51	.	83	78	.	93
25	.	77	52	.	86	79	.	74
26	.	83	53	.	72	80	.	81
27	.	90	54	.	81			

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authorities report varying values for the fasting blood sugar in healthy subjects; thus Beaumont and Dodds (58) give 100 mgrm. % for the normal value. Wright (59) gives 80 to 100 mgrm. %, and others regard any figure lying between 80 and 120 mgrm. % as being within the normal limits. In view of the low average value of 84·9 mgrm. % obtained here, and the fact that no less than 64% of the figures lie below 90 mgrm. % and 26% below 80 mgrm. %, and that no figure is over 110 mgrm. %, we are justified in stating that a degree of hypoglycæmia occurs in epileptics, for Seale Harris (60), in the 1,867 normal persons he examined, only found fasting sugar below 79 mgrm. % in 4% of the cases.

The isolation of insulin and its use in the treatment of diabetes rapidly brought to light the fact than an over-dosage could give rise to a dangerous condition of hypoglycæmia in which epileptiform fits were liable to occur. J. W. Mackay (61) was the first to suggest that these fits might be related in any way to clinical epilepsy. At the present time a considerable number of reports on blood sugar values in epilepsy exist. The largest number of cases published are those of Lennox, O'Connor and Bellinger (62), who examined the fasting blood sugars of a series of 267 epileptics. Their figures show an average value of 90 mgrm. % compared with 100 mgrm. % found by them at the same time in healthy subjects. The true value should probably be below this figure, for unfortunately a certain proportion of their cases (they give no idea what proportion) were under treatment with luminal (phenobarbital); Steinnetzer and Swaboda (63) and Jacoby (64) have shown that any hypnotic raises the blood sugar, and Bang (65), Underhill and Sprunt (66) and S. Weiss (67) have demonstrated that this is particularly true of the barbitone group to which luminal belongs. In a series of 140 blood-sugar curves in epileptics, Lennox and Benninger (68) obtained a similar series of fasting blood sugar values, but it must be noted that 66% of the figures lay below 100 mgrm. % and 34% below 90 mgrm. %. Unfortunately these figures are also useless for purposes of comparison, as an unstated proportion of the cases were under treatment with luminal.

In 1931 Mackay and Barbash (69) published a report of blood sugar findings in 66 epileptics. The average fasting value in their cases was 81 mgrm. % (estimated by the method of Folin and Wu (90)), only one of the series having a fasting blood sugar of over 100 mgrm. %. Gosden and Fox (32) in 17 cases found an average value of 82 mgrm. % (Folin and Wu). Wladyenzko (70) reported definite hypoglycæmia in 18 cases, and obtained clinical improvement with a high carbohydrate diet. Shaw and Moriarty (71) obtained remarkably low figures in the blood sugar values of fasting epileptic children, and Patterson and Levi (72) report low sugar contents in the cerebro-spinal fluid. Goodall, in the Maudsley Lecture, 1927 (73), stated that epileptic fits could definitely not be due to hypoglycæmia, and gave as authority for this statement the reports on the work of Daly *et al.* (74), who only examined 4 cases

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and then obtained low figures, of Drury and Farran-Ridge (75), who state that they found normal fasting sugars in 15 epileptics, but do not publish the figures they obtained, and Holstrom (76), who reported the blood sugar values of 20 epileptics examined to be normal, but in view of the fact that a quarter of an hour before withdrawing the blood he injected adrenaline, it is not surprising that he obtained higher figures than other observers. Examination of the results which are of any value shows that the fasting blood sugar of an epileptic is generally a little over 80 mgrm. % whatever method of estimation is employed. This figure is just within the lower limits of normality.

It is a known fact that, though the fasting blood sugar of a healthy subject is fairly constant, it is liable to periodic minor variations upwards and downwards throughout the day. Kersten (77), Holmstrom (76) and Vollmer (78) have demonstrated that this fluctuation is particularly well marked in epileptics, and they have also shown that the fits occur at the lowest point in the sugar curve. Macleod (79) states that hypoglycæmic symptoms are liable to occur in human beings when the blood sugar lies between 80 and 70 mgrm. %. Wauchope (133) gives similar figures, though Wright states that convulsions are not liable to occur till the blood sugar is below 75 mgrm. %. It can be seen that, if the fasting blood sugar of an epileptic is at the level of 80 or a little more, he has a very small factor of safety for fluctuation, and consequently any relatively minor drop in the sugar level, which would pass completely unnoticed in a normal individual, would in an epileptic give rise to symptoms of hypoglycæmia with a possibility of *petit mal* or *grand mal* convulsions. The result of these convulsions would be to stimulate the sympathetic and so cause a rise in blood sugar by calling on the liver glycogen, the convulsions being, as Muskens (51) has said, a protective reflex. It is reasonable to suppose that sometimes a fit may occur when no glycogen is present in the liver. If this were to occur, recovery could not take place, and one fit would run into another, the condition of *status epilepticus* being produced (51, 56). In favour of this view we have the statement of Muskens (51) and Turner (20) that *status epilepticus* never occurs in well-nourished animals, and further, the fatty degeneration of the heart which has been reported from *post-mortem* examinations of patients who have died in *status epilepticus* by Mott (80), and more recently by Collier (1), and considered to be indicative of a severe toxæmia, might equally well be due to acute cardiac malnutrition due to hypoglycæmia, coupled with the excessive work for the heart due to the labour of the prolonged convulsions.

Having shown that a degree of hypoglycæmia does exist in epilepsy, further investigations were made in an attempt to discover the cause.

Glucose tolerance tests were carried out on patients who were still subject to fits, and were under no medical treatment. A fasting specimen of blood was withdrawn by veni-puncture, 50 grm. of glucose administered and further blood specimens taken at half-hourly intervals, the blood specimens being

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estimated as above by Calvert's method (57). The curves obtained are shown in Table II.

TABLE II.—*Glucose Tolerance in Untreated Epileptics* (*mgrm.* %).

	Fasting.	½ hour.	1 hour.	1½ hours.	2 hours.
1	89	137	119	99	86
2	96	90	80	79	79
3	66	103	87	..	..
4	79	116	84	73	72
5	80	142	65	78	59
6	68	92	122	59	67
7	82	113	88	71	90
8	81	115	89*	90	111
9	81	130	91	..	89
10	82	115	126	113	101
11	93	94	81	82	..
12	57	123	171	134	..
13	81	151	181	..	..
14	97	119	93	..	..
15	89	154	145	116	..
16	102	168	140	126	..
17	101	104	..	118	..
18	91	88	104	101	..
19	88	130	101	103	..
20	109	143	146	138	..
21	73	146	150	137	..
22	105	137	140	120	..
23	109	180	185	159	..
24	87	133	134	118	..
25	99	133	140	118	..
26	91	125	114	90	..
27	101	121	132	112	..
28	118	150	128	101	(Excited.)
29	89	115	102	72	..
30	57	97	96	90	..
31	64	129	..	86	..
32	79	96	82	80	..
33	80	93	83	..	..
34	97	117	123	98	..
35	84	114	115	109	..
36	87	119	128	101	..
37	90	97	93	94	..

* Fit at this point.

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Table II—*continued.*

	Fasting.	½ hour.	1 hour.	1½ hours.	2 hours.
38	82	93	108	77	..
39	84	118	114	92	..
40	93	123	123	128	..
41	90	91	88	92	..
42	92	102	70	63	..
43	83	116	104	81	..
44	109	114	96	101	..
45	91	97	105	109	..
46	98	112	115	95	..
47	106	169	124	108	..
48	93	140	98	90	..
49	93	146	142	88	..
50	99	169	132	90	..
51	103	128	107	92	..
52	104	186	146	119	..
53	108	115	104	101	..
54	78	103	102	80	..
55	100	135	105	101	..
56	87	150	106	82	..
57	105	137	118	99	..
58	83	106	98	95	..
59	67	131	127	192	..
60	89	132	99	81	..
61	79	120	96	96	..
62	74	82	99	..	..
63	72	72	80	89	..
64	78	110	93	63	..
65	80	146	111	71	..
66	86	137	91†	67†	..

† Fit midway between these two.

A previous series of glucose tolerance curves from 66 epileptics has been reported by Mackay and Barbash (69), and they have suggested that the curves obtained should be classified under the following headings:

(i) Hyperglycæmia group in which the maximum sugar content in the curve exceeds 180 mgrm. %.

(ii) Normal group where the maximum sugar content lies between 150 and 180 mgrm. %.

(iii) Subnormal group where the maximum sugar content is between 125 and 150 mgrm. %.

(iv) Markedly subnormal where the maximum sugar lies below 125 mgrm. %.

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This classification is not really satisfactory, for the shape of the curve is as important with regard to its normality as is the peak level ; further, the normal peak value is generally between 120 and 140 mgrm. %, and not over 150 as in this classification, though Trumper and Cantarow (99) state that 140 to 160 are general figures. Nevertheless for the sake of uniformity Mackay and Barbash's classification will be retained in this paper. Examination of the curves in Table II shows that 32, *i.e.*, 48·5%, fall in Group IV, 25, *i.e.*, 38%, fall in Group III, 9% fall in Group II, and only 4·5% in Group I. Mackay and Barbash's report covers 66 epileptics, but from a private communication it appears that at least 6 of these were under phenobarbital treatment. The remaining 60 show only 8% in Group I, 20% in Group II, 22% in Group III, and 50% in the markedly subnormal Group IV. As the complete curves obtained by Mackay and Barbash have never been published, those that are still available, which are unfortunately only those from male patients, are shown here in Table III by permission of Dr. G. W. Mackay. The 140 curves obtained by Lennox and Bellenger are, as mentioned above, useless for purposes of comparison, as an unspecified proportion were having barbitones administered ; in spite of this, 26% of their curves are in Group IV.

The fact that such low peak values are found in the sugar curves of epileptics, as indicated by the high proportion falling in Mackay and Barbash's groups IV and III, coupled with the low fasting values, indicates that a definite hypoglycæmia is present in epilepsy. Indirect evidence is given to this by Raimann (81), who noted increased sugar tolerance in this condition.

Hypoglycæmia occurs as a result of various endocrine disharmonies (82, 83), particularly hypopituitarism, in hypothyroidism, in suprarenal insufficiency, in hyperinsulinism, and in liver deficiency (84). Cammidge (82) states that it occurs in nervous conditions, but it is reasonable to suppose that any nervous symptoms might be secondary to the hypoglycæmia rather than primary, for Greisheimer (85) found that in decerebrate dogs the nervous irritability was inversely proportional to the blood sugar level. Hoxie and Lisherness (86), in a series of routine blood examinations, noted mental and nervous abnormalities in those with low sugar values, and Cameron (134) describes how nervous instability in children can be alleviated by glucose. Further cases of mental symptoms and convulsions associated with a low blood sugar have been described by Ramsbotham and Eastwood (87), Guy-Larroche *et al.* (88), Moore, O'Farrel *et al.* (89), and many others.

From the examination of the shape of the blood sugar curves obtained, it is impossible to come to a definite conclusion as to the cause of the hypoglycæmia. The published figures of the basal metabolic rates in epilepsy (34 35, 36) and our own findings exclude hypothyroidism. None of the cases under examination showed any of the classical symptoms of hypopituitarism, though Tucker (25) states that he found dysfunction of this gland in a high proportion of his cases. Any marked abnormality of adrenal function could not have

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TABLE III.—*Glucose Tolerance Curves in Epileptics obtained by G. W. J. Mackay and H. Barbash.*

	First examination.					Second examination.					
Case.	Fasting (mg. %).	½ hour (mg. %).	1 hour (mg. %).	1½ hours (mg. %).	2 hours (mg. %).	Case.	Fasting (mg. %).	½ hour (mg. %).	1 hour (mg. %).	1½ hours (mg. %).	2 hours (mg. %).
1	83	136	107	79	51	1	88	115	160	93	[illegible]
2	88	..	..	..	..	2	..	..	..	..	..
3	93	125	63	54	68	3	79	107	100	88	[illegible]
4	79	107	107	88	83	4	..	..	..	..	..
5	88	93	88	79	65	5	75	93	62	68	[illegible]
6	88	125	100	75	60	6	..	..	..	..	..
7	75	115	88	83	75	7	..	..	..	..	..
8	93	115	125	75	79	8	83	125	88	83	[illegible]
9	100	166	187	150	107	9	100	166	187	150	[illegible]
10	93	187	170	67	78	10	..	..	..	..	..
11	100	115	79	68	71	11	78	107	75	55	[illegible]
12	88	136	65	85	68	12	88	136	65	85	[illegible]
13	88	105	94	88	..	13	100	125	107	83	[illegible]
14	75	93	62	68	71	14	..	..	..	..	..
15	79	115	125	96	93	15	75	100	115	96	..
16	83	100	107	88	93	16	79	100	93	88	[illegible]
17	107	125	100	83	93	17	93	125	115	197	[illegible]
18	83	150	88	63	57	18	79	125	71	88	[illegible]
19	93	136	142	88	79	19	70	88	100	83	..
20	75	93	88	65	71	20	..	..	..	..	..
21	83	93	100	88	57	21	..	..	..	..	..
22	83	150	100	75	75	22	..	..	..	..	..
23	83	125	125	88	60	23	79	125	100	83	[illegible]
24	88	136	88	63	60	24	..	..	..	..	..
25	86	138	93	79	..	25	..	..	..	..	..
26	88	160	125	115	100	26	..	..	..	..	..
27	88	79	83	125	62	27	..	..	..	..	..
28	88	160	138	138	60	28	..	..	..	..	..
29	85	187	166	160	100	29	..	..	..	..	..
30	88	103	93	96	83	30	..	..	..	..	..
31	93	166	160	136	100	31	83	115	107	75	[illegible]
32	100	187	187	150	103	32	..	..	..	..	..
33	75	75	107	136	115	33	..	..	..	..	..
34	85	125	138	160	93	34	75	136	83	60	[illegible]
35	73	166	75	75	60	35	75	125	93	88	[illegible]

TABLE IV.

	Gloucester curves (%).	Mackay and Barbash (%).	Lennox and Bellinger (%).
Group I . .	4·5	8	(20)
Group II . .	9·0	20	(28)
Group III . .	38·0	22	(26)
Group IV . .	48·5	50	(26)

been present in the cases examined, as the blood-pressures and pulse-rates were all within normal limits. Private inquiry shows that the cases in Table III were also normal in this respect. Liver deficiency, though stated to be present to some degree in epileptics (29, 30, 31, 32, 33), could not have been marked

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enough to give rise to such low sugar values without showing some other sign of impaired function ; further sugar curves in liver deficiency would have been of a more peaked type. Hyperinsulinism with symptoms indistinguishable from clinical epilepsy have been described in a number of cases recently. Howland *et al.* (91) described a case which was found to be due to carcinoma of the islets, and similar cases have been described by Wilder *et al.* (92). Carr *et al.* (93) describe a case of adenoma of the islets, and McClenahan and Norris (94) and Allen *et al.* (95) review a number of similar cases in which both fits and mental symptoms improved as a result of the rise in blood-sugar produced by removing the neoplastic pancreatic tissue. Hypoglycæmia where no neoplasm was present and simple hypertrophy of the islets tissue was suggested as the cause has been described by Finney and Finney (96), and more recently by Griffiths and de Wesselow (135). A review of the published cases of hyperinsulinism has been made by Harris (97).

In view of these reports and the absence of other localizing signs, it is probable that hyperinsulinism is the cause of the low blood sugars found in the epileptics under examination. Support is given to this statement by the fact that the figure obtained in the last specimen in the glucose tolerance test in Tables II and III is often considerably below the fasting value, which Depisch and Hasenohrl (98) regard as a sign of islet activity. Further support is given to this view by the fact that an increased number of fits occurs in epileptics at the menstrual periods (20, etc.), at which time Vogt (100) and Rudolf and Rothery (101) have shown there is an increased sensitivity to insulin due to the high folliculin content of the blood activating the insulin present (102).

The therapeutic findings in epilepsy are also in favour of this hypothesis, for the barbitones, which are indisputably the most efficacious drugs, raise the blood sugar (65, 66, 67). Jackson (103) has shown that sodium barbital prevents two-thirds of the experimental fits obtained by insulin injection, and this is approximately the proportion of epileptics who benefit from luminal (phenobarbital). Chloral, which Zabreski (21) and others recommend in epilepsy, similarly raised the blood-sugar (104, 105), and caffeine, which has been described as relieving epileptic convulsions (14, 15, 16), has been shown by Popper and Jahoda (106) to prevent the convulsions of insulin intoxication.

Further Investigations.

1. *Effect of Luminal (Phenobarbital).*

All the epileptics under treatment with luminal (phenobarbital) were examined, fasting blood sugars being obtained from 14 cases and estimated by Calvert's method (57). The results are shown in Table V.

The average value is 93 mgrm. %—9 mgrm. higher than the fasting average in untreated cases. It was not considered advisable to upset the routine

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treatment of this hospital, and obtain specimens of blood from a number of patients first without luminal, and later under its influence. Two epileptics, however, who were admitted during the period of these investigations showed fasting blood sugars of 78 and 92 mgrm. % respectively, and values of 86 and 101 when under luminal, which corresponds with the findings that the barbitones raise the blood sugar (65, 66, 67).

TABLE V.—*Fasting Blood-Sugars in mgrm. % in Epileptics under Treatment with Luminal (Phenobarbital).*

1	.	115	6	.	106	11	.	112
2	.	82	7	.	65	12	.	76
3	.	136	8	.	90	13	.	84
4	.	98	9	.	67	14	.	101
5	.	81	10	.	86			

Average value 93 mgrm. %.

TABLE VI.—*Glucose Tolerance in mgrm. %, of Epileptics under Treatment with Luminal (Phenobarbital).*

Case.	Fasting.	½ hour.	1 hour.	1½ hours.	2 hours.
1	112	168	152	161	160
2	115	106	101	103	..
3	90	129	116	89	..
4	83	116	104	81	..
5	82	138	106	100	..
6	98	154	129	104	..
7	106	118	109	95	..
8	65	112	226	168	..
9	81	133	..	102	..
10	67	131	127	102	..
11	74	104	61	79	..
12	101	164	153	134	..

Blood sugar curves obtained from 12 epileptics under treatment with luminal are shown in Table VI. Here again the general increase of the blood sugar level over that of untreated cases is apparent, and further, the glucose content of the final specimen withdrawn tends to be higher than the fasting value, which might be due to decreased activity of the islets of Langerhans (98).

2. *Glucose Tolerance during Post-Epileptic Confusion.*

As pointed out previously, specimens of blood for analysis were not withdrawn immediately after the fits, as previous work has shown that high sugar value would be obtained (53, 54, 55).

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A certain proportion of the epileptics in the hospital, it was noticed, however, became markedly confused after a bout of fits, and during this period they were not subject to convulsions. Glucose tolerance curves done during this period are shown in Table VII.

TABLE VII.—*Glucose Tolerance during Post-Epileptic Confusion* (*mgrm.* %).

No.	Fasting.	½ hour.	1 hour.	1½ hours.
1	108	128	125	137
2	110	128	136	146
3	108	172	118	130
4	106	172	118	130
5	86	101	180	142
6	93	148	126	99
7	112	168	152	161*
8	106	134	94	71

* Under luminal treatment.

These figures show that in the period of post-epileptic confusion the glucose tolerance is considerably reduced and that far higher blood sugar levels are present. This fact is probably responsible for the immunity from fits during this period.

3. *Influence of Autonomic Nervous System.*

The pancreas has been shown in recent years to receive a large nerve supply from the vagus (107), and this nerve has been said to supply the islets of Langerhans (108, 109). A considerable amount of work has been done to determine its influence on the blood sugar. Clarke (110), in 1925, reported that drugs which stimulate the parasympathetic nerves lowered the blood sugar, but the same observer in 1931 stated that the vagus carried inhibitory fibres to the islets (111). Sakurai (112, 113) reports that stimulation of the parasympathetic by pilocarpine lowers the blood sugar, and that this can be prevented by paralysing the parasympathetic nerves by atropine. Lange (114) found that by paralysing the parasympathetic by large doses of atropine the blood sugar could be raised, though small doses had the opposite effect. Casengra (115), on the other hand, states that atropine has no influence on the blood sugar level, and does not effect the hypoglycæmic curve produced by insulin injection. Ramsbotham and Eastwood (87) found that it had no influence on a case of spontaneous hypoglycæmia. These conflicting results are probably in part due to the fact that the islets of Langerhans are capable of producing insulin independent of any nerve supply (107).

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In view of the suggestion that epilepsy might be due to an excessive vagotonia (42) or other types of autonomic upset (38-41), a certain number of patients were put under special treatment.

A. Five cases were subjected to *parasympathetic stimulation* by physostigmine salicylate $\frac{1}{40}$ gr. three times a day for a month. The results obtained are shown in Table VIII.

TABLE VIII.

Case.	Usual number of fits per month.	Normal blood sugar (mgrm. %).	Number of fits under drug.	Blood sugar/drug (mgrm. %).
1	40	88	42	71
2	1	82	2	81
3	32	81	34	97
4	2	81	7	65
5	8	91	7	74
	Total 83	Average 84	Total 92	Average 78

Result: Slight increase in number of fits with fall in average fasting blood-sugar level.

B. Five cases had their *parasympathetic nerves paralysed* for a month by atropine sulphate $\frac{1}{100}$ gr. three times a day. The results obtained are shown in Table IX.

TABLE IX.

Case.	Usual number of fits per month.	Normal blood sugar (mgrm. %).	Number of fits under drug.	Blood sugar/drug (mgrm. %).
1	2	106	7	94
2	2	74	0	89
3	3	71	4	86
4	3	73	2	77
5	32	101	35	109
	Total 42	Average 85	Total 48	Average 91

Result: Slight increase in number of fits and in blood sugar.

C. Five cases were subjected to *stimulation of the sympathetic nerves* by means of ephedrine hydrochloride $\frac{1}{2}$ gr. three times a day for a month. The results obtained are shown in Table X.

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TABLE X.

Case.	Usual number of fits per month.	Normal blood sugar (mgrm. %).	Number of fits under drug.	Blood sugar/drug (mgrm. %).
1	7	97	5	102
2	15	72	13	111
3	9	66	8	87
4	1	80	2	97
5	5	74	2	77
	Total 37	Average 78	Total 30	Average 95

Result: Slight decrease in the number of fits with slight rise in the blood sugar.

These three series are, of course, too small to permit of any definite conclusion being made, but they do show that variation in the balance of the autonomic nervous system has only a very limited influence on the blood sugar concentration and the fit incidence. It would appear from Tables VIII and X that increase in the sympathetic tone raises the fasting blood sugar and tends to decrease the number of fits, though the findings in Table IX are not in accordance with this view.

4. *Glucose Tolerance Curves in Epileptics no longer subject to Fits.*

In the hospital there were five patients who had previously been subject to severe epileptic fits, but had for several years been completely free from convulsions, though the epileptic mentality persisted. Glucose tolerance curves from these patients are shown in Table XI.

TABLE XI.

Case.				
1	65	112	226	168*
2	61	100	155	..
3	91	136	140	140
4	88	88	116	101
5	92	150	168	191

* Under luminal.

These patients show very little difference in the fasting blood value from what one finds in the normal untreated cases with frequent convulsions; but on the other hand, the shape of the curve is totally different, the general impression here being of diabetes (hypoinsulinism), though this is counter-indicated by the low fasting sugar level. The impression given by these curves is that hyperinsulinism has ceased to exist in these patients and that they are tending to become diabetics, but that at the same time the other

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blood sugar controlling factors in the body are tending to keep the glucose fasting level in the blood at the figure which was previously normal for the patient.

General Discussion.

Having shown that epilepsy is associated with an abnormally low fasting blood sugar, and that the drugs which are of most value in the control of epileptic fits probably exert their influence, partly, if not wholly, by raising the blood sugar level, it is necessary to consider whether this effect could not be brought about by simpler methods.

The obvious preventive for hypoglycæmia is to put the patient on a high carbohydrate diet. The hypoglycæmia which has been found in the convulsions of pregnancy (116, 117) has been prevented by this course (118), and further, Allen (119) controlled the fits in a case of carcinoma of the islets by intravenous injection of glucose solution, and Heyn (120) prevented the fits of hyperinsulinism by a high carbohydrate diet. Unfortunately the problem is complicated by the fact that excess of carbohydrates stimulates the formation of insulin; thus Gibson and Laurimer (121) found that hypoglycæmia could be produced by intravenous injection of glucose solutions, and it is possible that the large number of cases of hyperinsulinism described by American observers may partly be due to the excessive carbohydrate diet in the United States (122, 123).

Waters (124) successfully treated three cases of marked hypoglycæmia with a low carbohydrate diet, and Sexton (125) treated a case whose fasting blood-sugar was only 60 mgrm. % with a ketogenic diet and obtained considerable improvement. These results are particularly interesting since marked diminution in the number of fits has been reported to take place in epileptics, especially children, placed on a ketogenic diet (126, etc.). The explanation probably is that just as a high carbohydrate diet stimulates the islets, a low carbohydrate or ketogenic diet tends to diminish their activity.

The factor of heredity in epilepsy is still far from completely understood, though Davenport and Weeks and Lunborg (132) state that it is a Mendelian recessive character. In view of this it is of interest to note that Cammidge and Howard (127) have recently shown that hypoglycæmia is inherited as a Mendelian recessive in mice, and Dunn (128) states, from consideration of Cammidge and Howard's previous work (129), that hypoglycæmia is recessive to the more prevalent hyperglycæmia. On the other hand, there is evidence to show that hypoglycæmia may be a condition acquired in intra-uterine life, for Dubreuil and Anderodais (130), and Gray and Freemster (131), had described cases of fœtal hyperinsulinism due to hypertrophy of the embryonic islets to counteract maternal diabetes.

In those cases of epilepsy which do not respond satisfactorily to medical treatment, it would appear that operation and partial removal of the pancreas should be carried out. Finney and Finney (96) have shown that such a

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procedure is practicable, and beneficial results have been obtained in those cases of hypoglycæmia due to neoplasm of the islets of Langerhans (91, 92, 93, 94, 95).

SUMMARY.

1. Epilepsy is associated with a low fasting blood sugar.

2. The glucose tolerance curve in epilepsy shows the islets of Langerhans to be over-active.

3. Those drugs which are beneficial in epilepsy raise the blood sugar level (except bromides, which reduce the irritability of the cerebral cortex).

4. In the post-convulsive phase of epilepsy the immunity from fits is associated with a raised blood sugar.

5. Variations in the balance of the autonomic nervous system have little influence on the incidence of fits.

6. Natural recovery from epilepsy is associated with the onset of hypo-insulinism.

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THE KETOGENIC DIET IN EPILEPSY.

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In recent years new avenues of approach to the treatment of epilepsy have been opened up, investigation and experiment have been stimulated, and, especially in young patients, definite hopes of cure have been held out. Experiments in metabolism have shown that a condition of acidosis is antagonistic to epileptic seizures. The ketogenic diet is one designed to produce acidosis artificially, this being achieved by reducing the carbohydrates and greatly increasing the fats.

For hundreds of years it had been known that fasting has a beneficial influence on epileptics, reducing the number of convulsions and ameliorating the mental depression and anguish. This effect of fasting was attributed to many factors, but careful inquiry was not made until recent years. In 1921 Wilder (1) maintained that the ketosis invariably associated with fasting was the factor responsible for the good results in epilepsy. However, since many diseases are favourably influenced by fasting, much more was needed than a mere statement to prove that the ketosis was responsible. This led to patients being treated therapeutically in order to produce an artificial ketosis, a ketosis not dependent on the amount of food consumed. Consequently workers in the Mayo Clinic started a system of dieting in epileptic adults that had the production of ketosis as its object. The results were indifferent, but in 1922 Helmholtz (2) treated children in this manner, and found that 31% were free from attacks and 23% benefited. The remaining 46% were not improved. Later, in 1924, the Mayo Clinic again started the treatment of selected cases in adults, with more encouraging results than the first trial.

No abnormal ingredient is consistently present in the urine of epileptics, neither are any of the normal constituents greatly increased or reduced, with the possible exception of ammonia. According to Bisgaard and others the ammonia is increased in the urine in epileptics, but bears no direct relation to seizures. They have worked this out on the basis of Hasselbalch's formula, namely, that in healthy subjects the ratio of ammonia nitrogen to the total nitrogen of the urine, if plotted against the pH of the urine, gives a fairly constant value. This work has focused attention on acid-base equilibrium. Many workers have given data on pH values in the blood of epileptics, and it is

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now generally accepted that although there is no persistent and consistent abnormal equilibrium, there is an unusual degree of fluctuation in pH values between normal limits from day to day, with a tendency to a more alkaline reaction.

The rationale of the ketogenic diet is based on the foregoing observations. It is an attempt to upset the acid-base relations in the patient by giving a bias towards acidity. Apart from independent observations on the subject conducted in a pure spirit of inquiry, there is much empirical evidence in support of the view that acidosis is antagonistic to the convulsive habit. As stated above, fasting has a favourable influence on the epileptic, and has been practised therapeutically for hundreds of years. Chemically the essential changes produced are in the direction of acidosis. Breathing of CO_2 also inhibits convulsions—a condition again tending to acidosis.

Very few observations on this subject of ketosis have been carried out in this country, so that an investigation into the claims made abroad is overdue. It will also be considered how far such a diet is practicable. It must be borne in mind that a treatment depending on self-sacrifice and great self-control is not easy of accomplishment, so that it would appear as if institutional patients who are continually under observation should be the best subjects for experiment.

The present investigation is on 20 cases of idiopathic epilepsy—that is, epilepsy in which there is no apparent organic lesion. The patients have not been selected because of preconceived ideas of their likelihood to react well, but with the view of testing the diet in all types of major epilepsy. Care has been taken to have representative cases. Thus some have many fits, others have few; some are bright and cheery, others are dull and demented. Many of the cases have violent bouts of excitement.

The average number of fits per month of the patients chosen for the diet ranges from 3·4 to 29·2. All these patients have major epileptic fits. As regards mental condition, 8 of the patients can give a good account of themselves, and are well behaved, except before and after fits. Five of these 8 employ themselves usefully. Six patients are of the demented class, who can give little account of themselves, and who are idle and apathetic except at "fitting" periods. The remainder (6 patients) are in a class between these two extremes, patients who, although able to give a fair account of themselves, are idle and apathetic, and at times violent and troublesome. The patients were equally distributed among three wards, so that the nursing problems could be reduced as far as possible.

To produce ketosis in a normal individual the conditions present in diabetes must be reproduced. This is done by limiting the carbohydrate to a very low point and increasing the fat to a very high point. The diet must finally show that fat is contributing at least four times the calories derived from carbohydrate and protein combined. For an effective ketosis, at least in

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adults, it may be necessary to raise the fat quota so that eight times as many calories are being derived from fat as from carbohydrate and protein. The degree of ketosis can be roughly measured by the intensity of the reaction given by the urine to the nitroprusside test.

The method of calculating the diet required for each patient was according to the tables set out by Barborka (3), who worked on the subject in the Mayo Clinic. The data were taken from the works of Du Bois, and of Boothby and Sandiford.

The first requirement was a diet so calculated that the patient was receiving sufficient food to provide the calories for his energy requirements and the maintenance of weight. These calories were given to the patient in the form of carbohydrate, protein and fat. At first, however, it was necessary to test the diet in order to discover whether the caloric requirements were correct so for ten days a non-ketogenic diet was calculated for each patient. According to Woodyatt and Wilder, the amount of carbohydrate in grammes in a progressively ketogenic diet is found by multiplying the total calories needed by factors ranging from 0·035 to 0·006. In the first diet, therefore, the carbohydrate ratio was calculated by using the greater factor. The protein requirements in grammes is estimated as one-third of the body-weight in pounds. The fat quota is obtained by multiplying the total calories required by 0·09 or 0·10.

Since the amount of carbohydrate in the diet is very small, it is considered wise to reach a true ketogenic diet in easy stages. Therefore at least two diets are interposed between Diet I and the diet necessary to produce ketosis without fail. The carbohydrate being withdrawn gradually, the patient is more willing to co-operate. In the second diet (after any necessary alterations have been made in the total caloric requirements as shown by Diet I), the carbohydrate allowed is four-sevenths of that in Diet I. In Diet III this amount is reduced to three-sevenths, and in Diet IV (the ketogenic diet used in the present series of cases) to less than two-sevenths. To allow for the calories lost by the reduction in carbohydrate the fat is increased slightly.

For convenience, those patients who weighed within a few pounds of each other were treated as if they were the same weight.

In calculating the quantities of the various foods the tables of Harrison and Lawrence (4) were used. These tables are compiled from the work of many authors, and give a good working standard.

There are great difficulties in devising these diets. The patients have all been used to high carbohydrate meals, so that ketogenic diets are apt to be nauseating. Carbohydrate articles of diet are much more bulky than protein and fat articles, so that a meal looks very small and insufficient. At the same time small concentrated meals rarely relieve the feeling of hunger that the patient brings to the table. As far as possible, therefore, vegetables containing small amounts of carbohydrate were used instead of potatoes. Another, and

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perhaps greater, hardship, is the cutting down of bread. Bread is the staple article of diet of all the patients in this hospital, so that at meal-times the ketogenic patients cast envious glances at the liberal helpings of their more fortunate friends. It was necessary, of course, to give the selected patients their meals at separate tables, specially looked after by a nurse.

It was explained to all the patients capable of appreciating the points exactly what was intended and what was expected. It has always been our experience that epileptics are easy to handle when they believe that something special is being attempted on their behalf. They will put up with many hardships, and at times, gladly accept the rôle of martyr. The other patients in the ward were warned that no food or sweets of any kind were to be given to the special patients. To guard against surreptitious eating was particularly difficult, since some of the chosen epileptics had as close friends patients who were liberally supplied with fruit, sweets and extra food. However, frequent examination of the urine for acetone bodies was a good check, and timely warnings to suspected patients often had the desired effect. If the urine showed no acetone bodies, the patient was immediately taxed with eating extra food, and it was remarkable how often a confession of guilt was received, followed by a resolution to do better in the future. On the whole the regime was well maintained—better than could have been expected. A great deal of the credit is due to the nursing staff, who entered into the task with enthusiasm—an enthusiasm quickly communicated to the patients concerned.

A typical day's diet for one of the patients was calculated as follows: The total caloric requirements of patient M. G— were 1,712 calories. Of this total 10·2 grm. of carbohydrate were to supply 42 calories; 35·6 grm. of protein were to supply 140 calories; and the remainder was to be supplied by fat. It was considered a better idea to assign the protein and fat elements before making up the carbohydrate quota, because the type of carbohydrate food required depends to some extent on the fat and protein content of the meal. Protein was made up mainly from meat, bacon, cheese and eggs; fat from butter, cream, bacon, cheese and cod-liver oil. The carbohydrate was made up mainly from bread, and from those vegetables having a poor carbohydrate content.

TABLE I.

	Ozs.	C.	P.	F.	Total calories.
Bread	½	7·5	3	..	43
Vegetables	3	2·5	..	..	10
Meat	2½	..	16	16	214
Bacon	2	..	10	30	311
Butter	2	..	..	50	465
Cheese	1	..	7·5	7·5	100
Cream	2	..	..	20	186
Cod-liver oil	1½	..	..	45	418

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This diet was made up into meals in the following manner. Breakfast consisted of bacon 2 oz., bread ½ oz., butter 1 oz., cream 1 oz. Tea (unsweetened) was given *ad lib.* For dinner the patient had meat 2½ oz., and vegetables 3 oz. For tea the menu was bread ¼ oz., butter 1 oz., cream 1 oz., cheese 1 oz. Again unsweetened tea was given *ad lib.* After each meal ½ oz. of cod-liver oil was given. For variety the vegetables could be changed frequently, a choice of the following being allowed: Sprouts, cabbage, tomato, cauliflower, swede and lettuce. Instead of cheese, one egg was allowed for every ounce. If the diet was calculated to contain 2 oz. of cheese, then it was found advisable, despite the extra cost, to give an egg in lieu of 1 oz. of cheese. Some patients objected at first to cod-liver oil, but they were few, and they soon came to look upon it as a medicine for their own good. At times cream or butter was substituted for part of the oil. However, if that were done, the patient found it difficult to consume so much butter and cream without the help of bread or fruit.

On the whole the diet was well tolerated and the complaints were dealt with easily. The greatest difficulty was the small amount of bread. A diligent search was made for a very low carbohydrate bread, such as is used in severe diabetes, but no firm was able to furnish a sample that was satisfactory. The lower the carbohydrate content, the dearer was the bread, and even the samples containing least carbohydrate would not have been bulky enough for our purpose. Everything considered, it was decided to continue with ordinary bread. Various kinds of bran wafers were secured, but the patients did not take kindly to them, and they were discontinued.

Constipation, generally complained of by epileptics, was treated by weekly doses of magnesium sulphate, but no great difficulties were encountered in this respect, as the ketogenic diet is fairly laxative.

The urine of every patient on the diet was examined twice weekly for acetone bodies. If the patient was faulty in habits, catheter specimens were obtained.

If the urine of any patient was found to be negative a special watch was kept on that patient, and if it remained negative the carbohydrate quota was cut down.

Before treatment commenced a special mental and physical examination was made of each patient, so that a comparison could be effected, apart altogether from the number of fits.

Results of Treatment.

It is now intended to present the salient features of the treatment and its results in a series of tables, which will show at a glance the various points brought out. First of all is a record of the fits each patient had in each month, covering the whole period under review—that is, 16 months.

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TABLE II.

	Number of fits during eight months before treatment began.								Total.	Number of fits during the eight months of treatment.								Total.
	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.		1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	
A. A—	34	11	32	45	20	21	35	36	234	24	42	43	14	35	44	34	28	264
E. R—	33	32	28	28	26	27	29	11	214	36	28	25	26	25	20	8	13	181
M. T—	11	9	24	4	24	40	30	19	161	7	3	10	10	12	18	9	13	82
R. P—	19	26	13	21	21	20	21	18	159	19	9	13	21	22	6	8	18	116
M. W—	2	3	4	5	9	10	107	9	149	9	8	10	9	29	4	15	20	104
N. K—	8	3	11	17	16	11	13	7	86	14	11	11	10	33	Died.			79
M. G—	6	4	12	10	10	22	9	7	80	2	2	2	2	0	2	1	2	13
H. P—	17	3	11	5	6	10	7	6	65	14	8	8	4	7	4	1	5	51
B. C—		(Before admission)				6	14	3	23	1	5	5	7	6	3	4	1	32
F. L—	7	8	8	5	9	10	10	4	61	6	7	10	6	8	15	1	8	61
A. F—	9	9	3	6	4	14	7	5	57	5	9	4	7	5	8	4	9	51
A. H—	4	7	7	8	13	6	2	5	52	1	3	5	6	3	1	3	3	25
R. R—	10	1	8	8	7	7	2	3	46	7	9	10	2	7	8	8	14	65
E. W—	3	4	8	7	6	7	7	2	44	6	7	7	8	9	6	6	6	55
A. Gr—	11	4	8	4	4	3	5	1	40	0	0	0	0	Died.				0
M. A. B—	3	3	2	3	7	9	9	8	44	0	10	1	3	3	7	5	1	30
A. Ga—	4	4	9	2	3	4	7	3	36	6	6	4	3	22	7	6	4	58
M. E. C—	2	4	7	6	2	4	3	4	32	3	2	3	1	4	2	2	0	17
E. T—	4	4	3	2	3	6	4	5	31	5	3	4	6	3	4	5	1	31
A. C—	4	4	3	7	6	2	0	1	27	0	2	0	0	0	1	2	2	7

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It will be noted that of the 20 patients, 13 had a reduction in fits, 2 were quite unchanged, and 5 had an increase. Thus, as regards actual fits, 65% were relieved, 10% were unchanged, and 25% reacted badly. In an institution where large numbers of epileptics are living together, any substantial reduction in the number of fits is a boon both to patients and staff, so that the above figures are considered satisfactory.

In the individual reports of each patient the fits were divided into day and night fits. Some patients habitually have more day fits than night fits, and *vice versa*. It is interesting to note what effect the ketogenic diet has on the time incidence of fits. Only five patients had an absolute increase in fits, yet 9 patients had an increase in night fits, and only 4 had an increase in day fits. Of those having an increase during the day, 2 also had an increase during the night. All the patients having an absolute increase of fits had an increase during the night. Three patients had increased night fits, though over the whole period they showed a decrease in fits. This would seem to show that it is during the night, in the period when the patient is furthest from his meal, that any increase in fits generally takes place (during ketosis). This is also the period when ketosis is at its lowest. It is always better for an epileptic to have his fits at night, since he cannot injure himself, and since it does not interfere with his daily task. Most epileptics would gladly welcome a regime that changed their time of fits from day to night. Therefore this result of the treatment can also be considered satisfactory.

The next table shows the fluctuations in weight over the same period of time. The weights were taken weekly and tabulated so that a strict watch could be kept. The diet in several patients was frequently adjusted at times to maintain ketosis, at other times to maintain weight.

TABLE III.—*Weight in lb.*

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
A. A—	94	94	89	92	92	91	92	92	95
E. R—	104	104	102	102	101	100	98	99	99
M. T—	155	160	151	148	149	146	145	142	140
R. P—	118	119	118	119	121	121	120	115	115
M. W—	91	91	90	91	96	98	98	Discontinued.	
N. K—	90	87	85	86	86	87	Deceased.		
M. G—.	107	107	107	109	109	108	109	104	98
H. P—.	114	112	113	114	116	118	118	118	119
B. C—.	112	110	119	114	112	112	111	112	108
F. L—.	112	112	112	111	114	115	119	116	118
A. F—.	148	142	144	145	149	150	148	148	152
A. H—.	105	105	108	109	104	103	108	106	105
R. R—.	124	124	123	122	120	119	120	118	116
E. W—.	104	106	103	103	108	105	108	103	107
A. Gr—	101	100	98	99	97	94	Deceased.		
M. A. B—	120	116	110	108	108	107	107	108	108
A. Ga—	132	133	132	131	131	132	131	128	132
M. E. C—	122	119	118	118	114	116	114	112	114
E. T—.	122	116	117	117	114	115	115	115	117
A. C—.	118	112	115	112	111	111	108	108	110

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Comments.

As was to be expected, most of the patients lost weight, but on the whole the losses were within reasonable limits, and not one patient appeared the worse for it. It is significant that, of the 5 patients who did not benefit from the treatment, 3 increased in weight, and of the other 3 who gained in weight, only 1, H. P—, was really considered to have benefited from the diet. Thus it would seem as if a diet low in caloric value is of advantage to epileptics.

The epileptics in this hospital are all certified patients, so that the mental attitude and the behaviour are as important as the number of convulsions.

The following table shows the mental reaction to the ketogenic diet. Any improvement is a distinct gain to an overworked and harassed staff.

Mental Reaction.

A. A—	Not improved.	A. F—	Not improved.
E. R—	Improved.	A. H—	Improved.
M. T—	Not improved.	R. R—	,,
R. P—	Improved.	E. W—	Not improved.
M. W—	Not improved.	A. Ga—	,,
N. K—	,,	A. Gr—	,,
M. G—	Improved.	M. A. B—	,,
H. P—	,,	M. E. C—	,,
B. C—	Not improved.	E. T—	,,
F. L—	,,	A. C—	Improved.

It will be noted that seven of the patients improved mentally. This was reflected in fewer attacks of excitement and violence, less tendency to quarrel, and the making of fewer false accusations. Indeed it was observable on this last head that some patients who habitually complained of ill-treatment and lack of consideration began to praise the staff and show appreciation of any little kindnesses. As has been noted before, this type of improvement may be due to more time being devoted to the patient. Only one patient improved mentally who showed an increase in the number of fits (patient R. R—. This patient also improved physically). All the other patients who improved mentally also had fewer convulsions. On the other hand 7 patients had fewer convulsions, but did not improve mentally. However, when it is considered that all the patients were institutional chronics, in whom intellectual deficiency was the rule, it will be seen that improvement could only be expected in the more troublesome and violent.

When the influence of weight is taken into consideration, only one patient improved mentally who gained in weight. This is contrary to what one would expect, since most patients who gain weight become less troublesome and more easily managed. A gain in weight is often the first objective of treatment in insanity, so that the above result is strange. However, when it is also noted that only two patients who gained weight had fewer fits, it suggests that a much lower diet in calorie value might be given to all epileptics with advantage.

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Apparently over-feeding does not agree with them. Another explanation is that most of the patients who gained weight might have had access to more food, but with the exception of one patient (E. T—), the ketosis was maintained well throughout the whole period, as shown by the acetone content of the urine. The patient mentioned was young, was given many privileges, and was much above the average in mental acumen ; but she lacked a sense of responsibility, and she stooped to many dodges to get more food, especially fruit and sweets.

Put shortly, then, the complete results of the ketogenic diet in the 20 cases under consideration are as follows: 60% had a reduction in seizures (one patient was completely free from seizures); 10% were quite unchanged; 30% had an increase in seizures; 35% improved mentally, and 65% were unchanged mentally.

The results of other investigations show that the above are a fair average. Most experimental diets have been on children. Peterman (5) treated children with a diet in which the ratio of calories from fat are 2, 3 or 4 times the total calories from protein and carbohydrate. His results were that 57% were free from fits, 25% were improved, while the remaining 18% were not improved. He found that the younger the children, the better the results, and that *petit mal* attacks were more easily controlled than the major attacks.

Luther and Moriarty (6) had a series of 27 patients: 33% were free from seizures, 41% were improved, and 26% were unchanged. All the patients who were freed from seizures were under 13 years of age.

The results of Helmholtz (2) in the Mayo Clinic are as follows: 31% were free from attacks, 23% were improved, 46% were unchanged. These patients were all children, and the results agree fairly well with those of Luther and Moriarty.

Weeks, Allen, Rennen and Wishart (7) fed 6 adult institutional epileptics with a very high fat diet (up to 580 grm. of fat and only 4 of carbohydrate). They concluded that there was no effect on the number of seizures. Barborka, however, beginning in 1924, treated 49 epileptic adults by the ketogenic diet. His results were: 14·3% free of seizures, 25% improved, 26·5% were not improved, while the remaining 34·2% were only on the diet from 2–4 weeks. His results therefore showed that nearly 40% were definitely improved.

Bastible (8) reported a series of 29 cases of epilepsy, mostly of the *grand mal* type in adult females, treated by ketogenic diet. He included biscuits made from bran and Carrigeen moss. He found a reduction in fits in 20 cases, and cessation in 2. Later he combined the treatment with the exhibition of acid salts and concluded that this had a beneficial effect. He was of the opinion that the ketogenic diet was worth an extended trial.

Conclusions.

The foregoing results show that even in institutional epileptics of the lowest grade, ketosis engendered by a high fat diet is antagonistic to seizures in a fair

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number of patients. The results do not compare very favourably with those gained by Helmholtz in children, but it has always been recognized that adults are particularly resistive to treatment. Neither are the results good compared with Barborka's as regards complete cessation of fits. He treated 32 adult patients, but it must be remembered that Barborka's patients were not of the institutional class, but selected cases in which the epileptic attacks were the only evidence of abnormality. At the same time the Mayo Clinic patients were suffering mainly from *petit mal*, whereas this investigation has been carried out in patients who were having *grand mal* attacks.

The results show that in adult epileptics of the chronic class, much can be done to reduce seizures and limit impulsive behaviour by the use of the ketogenic diet. That 65% of patients are greatly relieved is assuredly a good result, especially when dealing with a seemingly hopeless type of case. There are difficulties in maintaining the diet, but in well-regulated hospitals it is by no means above the talents of the staff.

The reason why ketosis should limit the number of convulsions in epilepsy is not easy to discover, but the following observations do throw some light on the problem.

If the establishment of acidosis in epilepsy is of value in treatment, then it follows that the administration of alkali should result in an increase in seizures. In the cases in which this has been done the results are striking. As far back as 1897 Charon and Briche (9) (who believed that acidosis was present in untreated epileptics) gave subcutaneous injections to 8 patients who showed an increased frequency in the fits. Lennox and Cobb (10) gave alkali to a fasting epileptic with a resulting increase in seizures. Another patient of theirs, in whom acidosis had been induced, first by fasting, and then by administration of $CaCl_2$, was given alkali after each period of acidosis. The result was a great increase in convulsions. In some patients, although acidosis is actually present, continued administration of alkali results in seizures. This suggests that it is the sudden change from acidosis to alkalinity that precipitates the seizures.

It has been already stated that hyperpnœa in epileptics frequently results in the precipitation of a seizure. In rapid deep expiratory breathing the patient gets rid of CO_2 from the blood, with the result that the alkalinity increases; a seizure is the result. If, however, the patient is made to re-breathe the air he has actually expired (air now having increasing amounts of CO_2), the expected seizure does not occur. This is apparently due to the high content of CO_2 in the inspired air. Again, if the patient is made to breathe air that has decreasing amounts of oxygen in it without a corresponding increase in the CO_2, seizures result. This last experiment is carried out by making the patient re-breathe the expired air from which the CO_2 is removed. Relating these experiments, and remembering that it is not possible to induce seizures in an epileptic by hyperpnœa if pure oxygen is breathed, it would appear that

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oxygen lack in the tissues is the fundamental condition. Oxygen is given up to the cells much more readily when the percentage of CO_2 in the blood is relatively high, while the converse is equally true. Thus, decreasing the CO_2 of the blood has a similar effect to limiting the oxygen supply. A decrease in CO_2 in blood results in a bias towards alkalinity, therefore acidosis is a condition in which the tissues much more readily receive oxygen, and alkalosis a condition in which the tissues find difficulty in consuming oxygen. Apparently it does not matter a great deal how the acidosis or the alkalinity is produced. In epilepsy the cells most affected are the neurones, and it is well known that in oxygen deficiency the neurone system is the first to suffer. In the normal individual consciousness is lost without actual tonic or clonic muscular spasms, but in epilepsy it is not to be supposed that the nervous system is ordinarily robust. Probably it reacts to much smaller deficiencies in oxygen supply and in an exaggerated fashion.

It is not being suggested that epilepsy is a syndrome depending on an abnormal alkaline bias in the blood and tissues. This may be the cause, but oxygen supply to the tissues can be affected in many ways besides decreasing CO_2 in the blood. For example, the blood supply may be at fault, as in spasm of arterioles, or stasis of the venous return. The arterial spasm theory has many upholders at the present time, but it must be remembered that arterial spasm merely leads to the tissues being starved (principally of oxygen, since the cells react most quickly to it, probably because no tissue interchange can take place without some oxidation process).

The essential cause of epilepsy remains unknown. It is perhaps nearly related to angina pectoris, migraine, and general muscle cramps. All these conditions are alike in that there may be many precipitating factors quite different from the essential cause.

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STUDIES IN EPILEPSY.*

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Hippocrates was the first to regard epilepsy, not as a " sacred disease ", but as a disorder due to natural causes. He believed that a causal relationship existed between humidity of the brain and the epileptic crisis—a hypothesis that in recent years has assumed prominence following the work of Temple Fay (27) and McQuarrie (28). According to Fay an abnormal increase in intracranial pressure is brought about by the accumulation of fluid over the cortex, due to impairment of function of the Pacchionian bodies.

The majority of recent workers have, however, concerned themselves directly or indirectly with the rôle played by cerebral vascular disturbances. An extensive review of the literature is given by Lennox and Cobb (29), who suggest that the most probable explanation of the convulsion is cerebral arterial spasm, causing decreased capillary blood-flow. This would produce, firstly, deficiency in oxygen supply, with consequent alkalosis of the brain, and secondly, œdema resulting from the increased passage of fluid outwards through the capillary walls.

The present investigation is concerned with both clinical and biochemical aspects of the subject, and is accordingly divided into two parts. In Part I an assessment is made of the value of vaso-dilator substances in the treatment of epilepsy, while Part II comprises a study of the regulation of acid-base equilibrium of the blood by epileptics and its relation to seizures.

Part I.—The Rôle of Vascular Spasm.

Acetyl Choline and Pacyl in the Treatment of Epilepsy.

Since Hughlings Jackson (1), in 1870, pointed out the possibility of the epileptic seizure being determined by contraction of the cerebral arteries, the rôle of " vascular spasm " in this disorder has been a subject of clinical and experimental interest. Vascular spasm is a mechanism now accepted by many clinicians as explaining a number of cases of transitory aphasias, hemianopias and migraine. The sudden blanching of the extremities as a result of

* A dissertation for which a special prize was awarded by the Royal Medico-Psychological Association (1933).

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vaso-constriction is well illustrated in Raynaud's disease. The association of Raynaud's disease with cerebral vascular disturbances has been recorded by Norman (2) and by Carp (3). Russell (4) has noted the similarity between the stages of the epileptic convulsion and the symptoms accompanying heart-block in Stokes-Adams' disease.

Many observations of the exposed cortex during epileptic attacks have been made. Foerster (5) describes the sequence of events repeatedly seen by him on the operating table. Sudden pallor of the cortex and arrest of cerebral pulsation is immediately followed by extreme hyperæmia, venous engorgement, and bulging of the brain. Horsley (6), Leriche (7), Kennedy and Hartwell (8) have observed similar changes. Corroborative evidence is to be found in the observations of the fundus oculi during an attack. Jackson (9), as long ago as 1863, noted that the fundus was pale before a seizure, and that during the convulsion the veins became large and dark.

Experimental evidence has recently been brought forward to show that the cerebral vessels contract after stimulation of the cervical sympathetic and dilate in response to vagus stimulation (Schilf (10), Forbes and Wolff (11)). The effect of these observations has been to bring again to the foreground the hypothesis that fits are precipitated by cerebral vaso-constriction. But although it is now generally acknowledged that the cerebral arteries are under vasomotor control, a causal relationship between cerebral vaso-constriction and the epileptic attack is by no means accepted (Notkin *et al.* (12), Wilson (13)).

On the assumption that seizures are due to vaso-constriction of the cerebral arteries, various operations on the cervical sympathetic chain have been performed in epileptic patients (Alexander (14), Bojovitch (15), Tinel (16), Zavialoff (17), Lauwers (18)). The results of cervical sympathectomy have, on the whole, been disappointing. Favourable results in certain subjects are reported recently by Lauwers (19) following the removal of the carotid body.

Attempts to influence epileptic attacks by the administration of vaso-dilator substances have been made. Popea and Eustatziou (20) in 1927 recorded beneficial results following the inhalation of amyl nitrite at the onset of attacks. In 1929 Villaret and Justin-Besançon (21) demonstrated the therapeutic value of injections of acetyl choline in Raynaud's disease, arteritis and similar complaints. The beneficial effects of acetyl choline in Raynaud's disease appeared to lend support to the vaso-constriction theory of epilepsy. In 1931 Etienne (22) and his co-workers at Nancy investigated the action of this substance on a group of seven epileptics. In two cases a notable reduction in the incidence of fits was recorded. Later, de Gennes (23) reported that injections of acetyl choline arrested the seizures in two cases of status. Similar results were described by Pagniez, Plichet and Decourt (24). Bolsi (25), in 1932, reported a dramatic reduction in the number of seizures in five of his eight cases. In some of the group investigated, the beneficial effect persisted for several days after the injections of acetyl choline. On the other hand,

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Dejean and Hughes (26) did not obtain any favourable results in four cases treated over a period of fourteen days.

Experimental.

The therapeutic effects of acetyl choline and of pacyl were investigated in fourteen cases of epilepsy. The cases selected were subject to frequent major convulsive attacks, which were unassociated with ascertainable organic disorder in the nervous system or elsewhere. The age at onset of the disorder and the age at the time of the investigation are recorded in the table. Either some degree of congenital mental defect or progressive mental deterioration was present in each member of the group. No change was made in the diet, usual medication or regimen of the subjects during the experiment. The type and frequency of all convulsions, auræ and equivalents were recorded for stated periods before, during and after treatment.

Acetyl choline bromide (B.D.H.) was administered by subcutaneous injection each morning for fourteen days. The initial dose given was 0·1 grm., followed by a daily dose of 0·15 grm. After seven days the dose was increased to 0·3 grm.

Pacyl is a derivative of choline and has the advantage of being administered orally. Its action as a parasympathetic stimulant is claimed to be more nearly constant than that of acetyl choline. Two pacyl tablets were given three times daily for fourteen days.

Table Showing Results of Treatment with Acetyl Choline Bromide and Pacyl.

Case No.	Age at onset.	Present age.	Number of seizures. During previous 14 days.	During pacyl treatment (14 days).	During acetyl choline treatment. (14 days).	During succeeding 14 days.	Remarks.
1	14	22	23	32	20	19	Unchanged.
2	7	31	34	29	30	41	,,
3	16	26	5	4	1	6	Improved.
4	7	23	5	4	3	4	Unchanged.
5	Inf.	30	7	8	3	1	Improved.
6	,,	39	4	4	4	3	Unchanged.
7	11	23	37	66	*—	—	Unimproved.
				During acetyl choline treatment (14 days).	During pacyl treatment (14 days).		
8	3	24	5	1	5	5	Improved.
9	3	29	3	1	2	4	,,
10	Inf.	33	2	0	2	1	,,
11	,,	21	5	4	5	5	Unchanged.
12	,,	18	2	12	12	4	Unimproved
13	,,	14	19	18	18	12	Unchanged.
14	12	20	9	7	9	8	,,

* Treatment stopped on account of increase in number and severity of seizures.

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Half the cases were first given a course of pacyl tablets, followed by a course of acetyl choline injections. In the other seven cases this procedure was reversed.

Discussion.

The influence of pacyl tablets and acetyl choline injections is shown in the table. No beneficial effect was observed during pacyl administration. During acetyl choline treatment it will be noted that in five cases a reduction in the number of seizures occurred. There was no association between the decrease in the number of convulsions and the increased dosage (0·3 grm.) given during the second week. In two cases diminution in the number of seizures was accompanied by an increase in psychic equivalents. No change in the type or severity of the seizures was observed in the other three cases, classified as improved. One of these (Case 8) became brighter and more energetic and this mental improvement was maintained for some weeks, although the number of fits again increased after treatment. There was no mental change noted in the other two cases that showed decrease in number of fits during the injections. Case 5, where a decrease in the number of seizures occurred during the fourteen days' period following acetyl choline administration, was confined to bed at this time. With regard to Case 7, a great increase in the number and severity of attacks coincided with the end of the pacyl treatment. An attempt to arrest the rapidly repeated seizures by two 0·4 grm. doses of acetyl choline failed and this form of treatment was in consequence stopped.

The results obtained in the seven cases classified as unchanged do not call for individual discussion.

Comment.

The question arises whether the beneficial effect occurring in the few cases of the group during acetyl choline therapy may not be dependent on some other factor than the action of this substance. It is well known that periodic fluctuations in the incidence of seizures occur in many epileptics. An investigation of the incidence of fits occurring in these cases during the previous three months, when the subjects were under the same conditions in all respects except for acetyl choline treatment, did not disclose any fourteen-day periods comparable with those which have been held to justify the use of the word "improved" in the table.

While, therefore, there was no dramatic reduction in the incidence of seizures, it would seem that a small proportion of the group were less susceptible to attacks when under the influence of acetyl choline.

The results obtained from the administration of the choline derivative, pacyl, were discouraging.

On the whole, it may be said that the results which followed the use of these

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arterial antispasmodic substances do not lend support to the hypothesis that cerebral vaso-constriction is by itself the precipitating factor of the epileptic attack. It must, however, be admitted that the action of the drugs employed may not be the same in the case of the cerebral circulation as in the peripheral vessels of the body.

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Part II.—Acid-Base Equilibrium of Blood in Epilepsy.

In epilepsy much attention has been directed to metabolic changes which influence the incidence of seizures. It has been demonstrated that in certain cases seizures may be modified by measures which affect the acid-base balance of the organism, induced alkalinity favouring the number and severity of seizures and induced acidity having the reverse effect. In view of these observations, many attempts have been made to find a correlation between the physical condition of epileptics and a disturbance in the regulation of acid-base equilibrium of the blood.

It has been established by most authors that in the period between fits, variations in blood constituents are usually within physiological limits. Much confusion, however, prevails as to what takes place at the time of the actual seizure. Some authors, for example, claim that the fit is preceded by an increase in alkali reserve (alkalosis) and in pH (alkalæmia), others that the reverse (acidosis and acidæmia) takes place, while yet others have observed no appreciable change. The explanation of these diverse opinions lies in the fact that the normal variations in alkali reserve and pH of different individuals, and even of the same individuals at different periods, is of wide range, and it follows that sound conclusions can be drawn only from a large number of observations. The difficulty of obtaining a large number of

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cases during and particularly preceding seizures is apparent. It appeared, therefore, that the most satisfactory way of approaching the problem was to attempt to obtain specimens of blood from individual patients immediately before, during and after a particular seizure, and to compare these with samples taken during the free intervals.

The clinical material selected for this study consisted of institutional cases of essential or idiopathic epilepsy with fits of frequent occurrence. The administration of drugs was discontinued, and careful observations made for twenty-four hours before specimens were taken. Notes were made during this period of all possible modifying factors, such as diet and previous medication, the mental and motor states of each patient, and the time and character of any sensations, auræ or fits. Samples of venous blood were taken from several patients at frequent intervals for a short time in the expectation that one of them might have a seizure shortly after a venepuncture. If this occurred, further punctures were made during and after the convulsive crisis. This procedure was successful on very few occasions, since the probability of a seizure taking place during the period of observation was slight. On the other hand, a number of specimens was obtained, representative of various inter-seizure periods.

A series of normal controls was obtained, and this was supplemented by healthy, high-grade defectives employed as ward workers in the mental institutions. The advantage of including these patients was that control specimens were thereby obtained under conditions identical with those of the epileptics, and could be analysed at the same time.

All subjects at the time of blood-sampling were in the post-absorptive state, and had rested for at least one hour.

EXPERIMENTAL.

Venepunctures, usually of the median basilic vein, were made without stasis, the blood being collected under paraffin in an air-tight syringe, and run immediately into tubes containing paraffin and a small amount of Evans's 9 : 1 mixture of potassium oxalate and sodium fluoride, previously moistened with two drops of saline. The blood was stirred gently with a thin glass rod and the tubes were then stoppered and placed in an ice-box. The blood-samples were allowed to stand in a refrigerator until sufficient plasma had separated out to be removed, under paraffin, without centrifuging. In this way any loss of CO_2 was minimized.

Estimations of alkali reserve, pH and lactic acid were carried out on the plasma.

Alkali reserve was determined by the titrimetric method of Van Slyke.

pH measurements were made by the electrometric glass electrode method. The apparatus used was that designed by Kerridge (41).

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Lactic acid was determined by the method of Friedemann, Cotonio and Shaffer (35), modified by Friedemann and Kendall (36). The percentage recovery of lactic acid was between 95 and 98.

The results obtained fall into two sections:

(1) General statistical results, consisting of averages of a number of isolated samples; these are shown in Tables I–III.

(2) Results from successive venepunctures performed on individual cases before, during and after a particular fit; these are represented graphically in Figs. 1–3.

Discussion.

(1) General Statistical Results.

Alkali Reserve.

Divergent opinions have been expressed with regard to the alkali reserve content of the blood in epilepsy and its variation in relation to seizures.

Bigwood (31), in presenting a large amount of experimental evidence, concluded that in the period between fits, the blood bicarbonate rested within normal limits. Katzenelbogen (40) reported that the "interval" alkali reserve was within the normal limits of 54–74 volumes of CO_2% in 31 patients, and Lennox and Allen (42) found the plasma bicarbonate within 55 and 70 volumes CO_2% in 88 out of 100 patients. Ballif and Reznic (30) state that the alkali reserve was normal in the free interval and immediately before seizures, but fell after seizures.

Gozzano (38), however, found that in one-third of his cases the "interval" alkali reserve was higher than normal. Dautrebande (33) also noted an increased alkali reserve, but stated that this had no relation to the occurrence of fits.

Torres Lopez (47), on the other hand, found that the "interval" alkali reserve was normal in the majority, but diminished in about 30% of his cases. Villacien and Urra (48) report a diminished alkali reserve in the period preceding the fit. Puca (45) also found a lowered alkali reserve in the pre-paroxysmal phase, with further lowering in the period following the attack.

Di Renzo (34) presented findings which differed from those of the above authors, and suggested that the alkali reserve rose from the normal value twenty-four hours before the fit, reached a maximum a few minutes before the crisis, fell rapidly to the normal value immediately before, and remained normal during and after the fit. The results tabulated, however, particularly for the period immediately preceding the fit, are clearly too few for detailed critical examination.

The results obtained for alkali reserve in the present investigation are

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TABLE I.—*Alkali Reserves of Venous Blood-plasma* (*vols. CO_2 per* 100 *c.c.*).

Case No.	Interval period.		2-hour pre-fit period.		During fit.		0 ½ hour after fit.		½ 2 hours after fit.	
	Number of observations.	Averages of alkali reserves.	Number of observations.	Averages of alkali reserves.	Number of observations.	Averages of alkali reserves.	Number of observations.	Averages of alkali reserves.	Number of observations.	Averages of alkali reserves.
1*a*	3	68·5	..	..	2	55	..	..	..	..
1*b*	7	70·5	..	..	..	..	..	..	..	..
1*c*	4	72·5	..	..	1	55	2	49	1	70
2	4	72	..	..	..	..	..	..	..	..
3	1	74	..	..	1	64·5	..	..	..	..
4	7	63·5	3	64·5	..	..	..	..	..	..
5	10	65·5	..	..	..	..	..	..	..	..
6	2	70	..	..	..	..	..	..	..	..
7	4	72	..	..	..	..	..	..	2	72·5
8	7	70·5	5	71	2	61	2	69·5	2	70
9	2	70	..	..	1	49·5	..	..	..	..
10	5	70	3	69·5	1	68	4	69	3	70·5
11	3	71	..	..	1	60	1	62	1	62
12	2	70·5	6	70	1	65·5	2	65·5	..	..
13	1	63	..	..	..	..	1	57	..	..
14	3	61·5	1	59·5	..	..	1	57·5	3	59
15	2	73	..	..	..	..	..	..	1	59·5
16	3	65	..	..	1	61·5	..	..	2	64·5
Highest individual result	..	78	..	74	..	68	..	71	..	73·5
Lowest individual result	..	58·5	..	59·5	..	49·5	..	44	..	57
Average of all results	70	*68·7*	18	*68·8*	11	*59·7*	13	*63·3*	15	*66·3*
Controls:										
Highest	..	73								
Lowest	..	57								
Average	12	*64·4*								

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recorded in Table I. These show, firstly, that the alkali reserves of epileptics in the interval period fall, with very few exceptions, within normal limits. Secondly, the average for epileptics of 68·7 volumes %, compared with 64·4 volumes % for normals, indicates an increase in epilepsy. This, however, is regarded as merely suggestive, in view both of the wide variation in individual alkali reserves, and also of the fact that these patients have been subjected to courses of luminal and other drugs which might conceivably affect their alkali reserve content. Thirdly, there is no appreciable difference between the alkali reserves of epileptics in the interval period and those in the two-hour period preceding the fit. It should be pointed out that in the results tabulated for the latter period, no case has been included in which previous fits had occurred on the same day.

The period of the few minutes preceding the fit is of great importance, but the results for this phase are too few to warrant special treatment. It is clear, however, that there is a fall in alkali reserve during a fit, and by correlating clinical findings with the results, it was manifest that the degree of this fall was related to the severity of the convulsion. In cases of severe major fits the decrease in alkali reserve was continued for some minutes after the crisis, but even in these instances recovery to normal was usually completed within two hours.

Hydrogen Ion Concentration.

In contrast with the varied opinions concerning the levels of alkali reserve during epilepsy, there is comparative unanimity amongst authors with regard to the hydrogen-ion concentration of the blood-plasma. It should be noted that previous investigators have employed colorimetric methods for the determination of pH, and that these give higher results than those obtained by the electrometric glass electrode technique.

Jarløv (39) found that the blood of epileptics showed a tendency to increased alkalinity before the convulsive crisis, and that this was replaced by a decrease following the attack. The attack was regarded as being a defence reaction of the organism against alkaline intoxication. Geyelin (37) concluded that although there was no definite pH curve characteristic of epilepsy, these patients showed a wider daily range than did normals. Osnato and co-workers (43) found that the pH of the plasma in 29 cases was within the normal range, given as 7·33–7·44. Bigwood (31) reported an increased blood alkalinity preceding seizures and applied the equation of Rona and Takahashi (46), $Ca^{++} = K \frac{[H^+]}{[HCO_3^-]}$, to his results, concluding that the effect of increased pH (in the absence of a corresponding decrease in HCO_3 ions) was a reduction in Ca ions, which in turn precipitated the fit. Dautrebande (33) suggested that the high pH values obtained were due to the presence in the blood of

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epileptics of an alkaline substance which combines with difficulty with CO_2 *in vivo*.

TABLE II.—*pH of Venous Blood-plasma.*

	Controls.	Epileptics. More than 2 hours before or after fit.	Within 2 hours before fit.	During fit.	0–½ hour after fit.	½–2 hours after fit.
Number of observations :	8	20	8	7	11	9
Highest	7·36	7·39	7·42	7·37	7·38	7·40
Lowest	7·30	7·30	7·32	7·15	7·28	7·31
Average	7·32	7·35	7·355	7·29	7·34	7·36

TABLE III.—*Lactic Acid of Venous Blood-plasma* (*mg./*100 *c.c.*).

	Controls.	Epileptics (during interval period).
Number of observations	8	8
Highest	18	18
Lowest	10	10
Average	13·5	13·0

The results recorded in Table II indicate a larger variation between the pH values of epileptics than exists in the normal The average pH in the two-hour period preceding the fit shows no significant rise from that in the interval period. On the average, however, epileptic plasma tends to be slightly more alkaline than normal, although, as in the case of alkali reserves, this is quite insignificant when applied to individual cases. During the fit there is a fall in pH, the extent of this being dependent on the severity of the seizure, and also on the time after the commencement of the fit that the venepuncture is made. In all cases the pH returns to normal limits in a short space of time.

Lactic Acid.

Very few determinations of blood lactic acid in epilepsy have been made by previous observers. Osnato and co-workers (43) found lactic acid values above normal for epileptics, and stated that this increase bears no relation to the time elapsing since the previous seizure and, therefore, is not due to the muscular exertion during convulsions. The figures recorded, however, are unreasonably high in a number of cases, and it is very unlikely that they would be obtained with the more refined experimental technique now available for determining lactic acid. Moreover, no experimental results for normal blood

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lactic acid are given. Ballif and Reznic (30) argue, without presenting experimental evidence, that the fall in alkali reserve immediately after a fit is due to the production of lactic acid resulting from muscular contractions during the seizure.

The results recorded in Table III indicate that in the interval period between fits the lactic acid content of the blood-plasma of epileptics is normal. This contradicts the findings of Osnato.

(2) Individual Cases.

Case 1. (Fig. 1.)

During the morning of the day of investigation the patient had a series of attacks, consisting of major fits at 7 a.m. and 9.30 a.m., and minor fits at 10.30 a.m. and 11.10 a.m. She was still stuporose, but of a good colour and breathing quietly when the first blood sample was taken at 11.50 a.m. At 11.55 a.m. the patient became rigid and cyanosed, and developed generalized clonic contractions, lasting two minutes, before relaxing into a stuporose state. At 12 noon venepuncture was about to be made when the patient had another major fit. A puncture was performed during the seizure, and at 12.10 p.m. a third blood-sample was taken, the subject at this time being restless and over-active. She was still somewhat stuporose half an hour later, full recovery taking place in about two hours. No further attacks took place for six days.

Case 12. (Fig. 2.)

This patient had a moderate major fit at 9.15 a.m. on the day of investigation. A blood sample was taken at 11.45 a.m. At 12 noon the patient was pale and said that he was about to have a seizure. A venepuncture was performed, the patient being quiet and co-operative. At 12.15 p.m. he had a short aura, a sensation of coldness in the right leg and " buzzing " in the head. His eyes rotated upwards, the head extended and he fell, with generalized muscular twitchings lasting about 20 seconds. A blood sample was taken. The patient recovered quickly and spoke at once. Further venepunctures were made at 12.20 p.m. and 12.45 p.m.

Case 17. (Fig. 3.)

The seizure observed was the only one occurring on the day of investigation. A blood sample was taken at 12.40 p.m. At 12.52 p.m. the patient had a severe major fit with muscular contractions, lasting over two minutes. A venepuncture was made during the fit. Recovery of consciousness took several minutes, the patient then becoming confused and over-active. Further blood samples were taken at 1.2 p.m. and 1.12 p.m., by which time the patient was quiet.

It is clear from a consideration of the graph of Figs. 1–3 that the fall in alkali reserve follows closely the increase in lactic acid, and that subsequent recovery of alkali reserve accompanies the removal of lactic acid. The relation between these is further demonstrated by comparison with Fig. 4, in which " exercise curves " given by normal individuals exhibit the same features. It is evident that the change in alkali reserve caused by the epileptic crisis is

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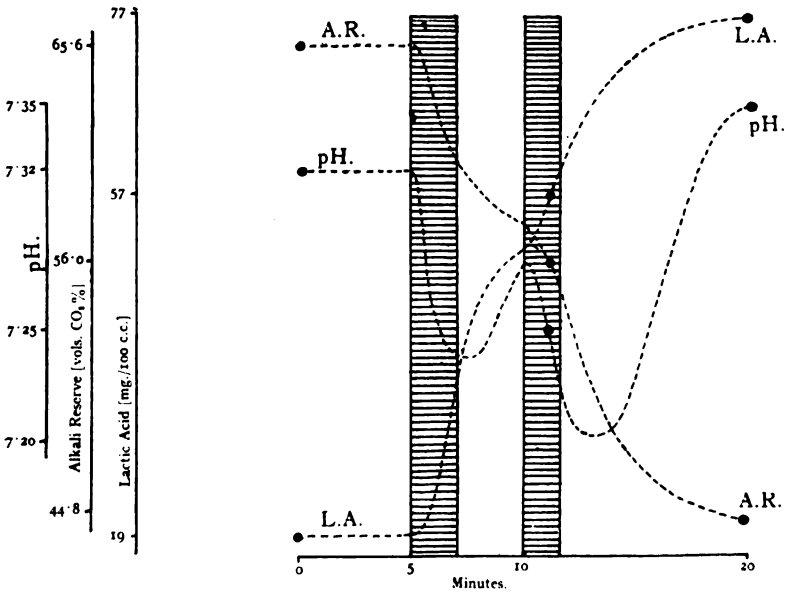

FIG. 1.—CASE 1.—Two severe major fits within seven minutes.

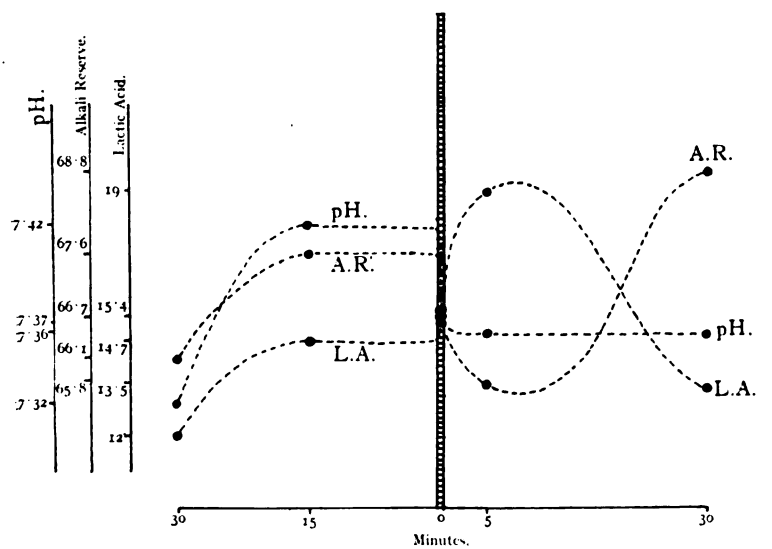

FIG. 2.—CASE 12.—Moderate major fit (20 seconds).

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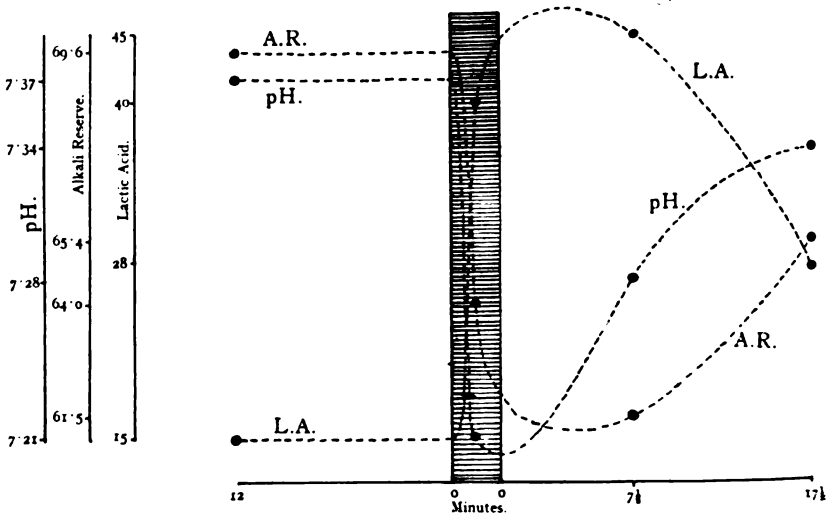

FIG. 3.—CASE 17.—Severe major fit.

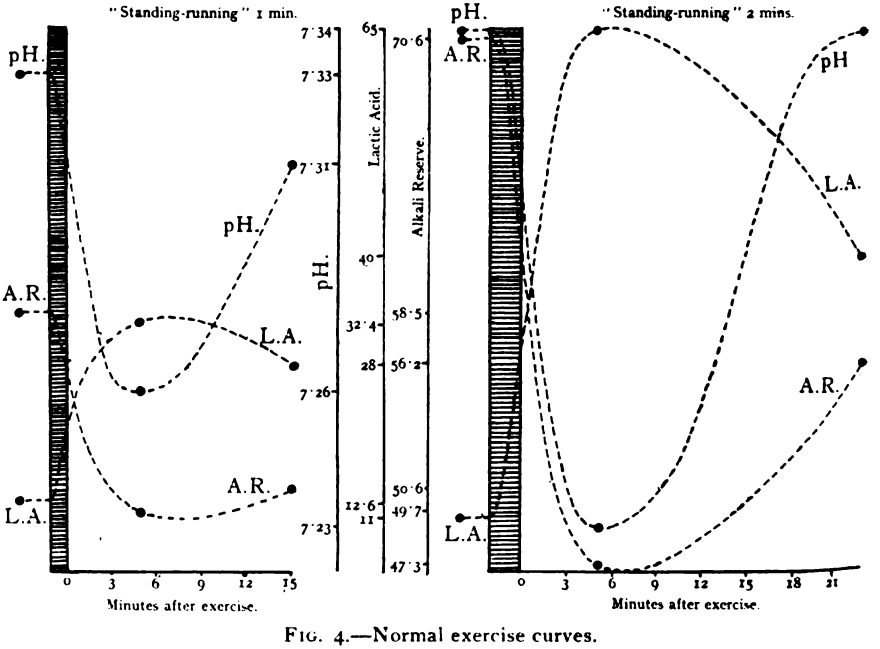

FIG. 4.—Normal exercise curves.

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accounted for very largely by changes in the concentration of lactic acid in the blood.

The amount of lactic acid accumulating in the blood as a result of muscular contractions is related to the efficiency of the recovery process, in which energy derived from the oxidation of a part of the acid is used in the re-synthesis to glycogen of the remainder. The first stage of the epileptic fit produces anoxæmia, and this impairs the efficiency of the bodily mechanisms (chiefly liver and muscles) for dealing with the removal of lactic acid. Moreover, many of the muscles involved in the production of lactic acid during the convulsion are not accustomed to dealing *in situ* with large quantities of this substance, and it has been well established by Bock and co-workers (32) and by Owles (44) that training is of considerable importance in preventing the leakage of lactic acid into the blood after muscular contractions. There is, therefore, good reason to expect the presence of large quantities of lactic acid in the blood as a result of severe seizures, and comparison of Figs. 1 and 4 shows that the blood lactic acid was higher after two consecutive fits than after the very severe exercise of a " standing run " for two minutes to the point of exhaustion.

The depression of pH during the fit is due firstly to the retention of CO_2 during the tonic stage, and secondly to accumulation of lactic acid during the clonic stage. These have additive effects in increasing the amount of free CO_2 in the blood, and in the case of a severe fit may lead to over-stimulation of the respiratory centre. This is shown in Fig. 1 by an increase in pH a few minutes after the fit to a level higher than the pre-paroxysmal one, in spite of the continued accumulation of lactic acid in the blood. In the case of normal individuals after exercise, on the other hand, recovery to the normal pH appears to be a more gradual process.

It appears almost certain from the above results that changes in the blood constituents described in this dissertation are the result of, and in no way the cause of, epileptic seizures.

Summary of Part II.

(1) The acid-base equilibrium of the blood in epilepsy has been studied, measurements being made of pH, alkali reserve and lactic acid.

(2) The results suggest that in the interval period between fits—

(*a*) Variations in alkali reserve and lactic acid are usually within normal limits, but those of pH extend to a range slightly above normal.

(*b*) The average lactic acid concentration is normal. The average alkali reserve and pH values are slightly above normal.

(3) The averages of results obtained for alkali reserve and pH during the two-hour period preceding the fit show no significant difference from those of the interval period.

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(4) Results obtained from blood-samples of individual patients before, during and after a particular seizure are illustrated by graphs, and lead to the following conclusions:

(*a*) There is a fall in alkali reserve during and for varying periods after the fit, this fall being accounted for by the accumulation of lactic acid in the blood. Decrease in lactic acid during recovery is accompanied by increase in alkali reserve.

(*b*) The blood pH falls during the fit, due firstly to apnœa during the tonic stage, and secondly to production of lactic acid during the clonic stage. Recovery to the normal pH is more rapid than in the case with normal individuals after exercise.

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Appendix.

Notes on Individual Cases Investigated in Part II.

Case 1: *Idiopathic epilepsy.*—W. F—, girl, æt. 22, admitted January 18, 1930.

Family history.—Mother alcoholic. Patient an only child. There is no known history of epilepsy, mental defect or insanity.

Previous history.—Birth, infancy and childhood apparently normal. At the age of 14 patient began to have epileptic fits, which gradually increased in frequency. Menstruation began normally at the age of 14, but stopped following a fright at 17. Increase in the number and severity of the attacks, with periodic maniacal outbursts, led to certification two years later. Attacks, mostly major, now average 30 per month. Gradual development of typical epileptic habitus: dull, stupid and obstinate.

Physical.—No abnormality of skull. Optic fundi normal. No cranial nerve lesion; no muscular weakness or spasticity; deep and superficial reflexes normal; no sensory impairment. No evidence of disease of heart, lungs or abdominal organs. Wassermann reaction of blood negative. Urine contains no abnormal substances. Blood-pressure 98/70.

Case 12: *Idiopathic epilepsy.*—R. W—, porter, æt. 23, admitted August 22, 1930.

Previous history.—Labour was normal and no instruments were used. He attended school till the age of 12, when he began to suffer from fits, with generalized muscular spasms and loss of consciousness, followed by a short period of stupor. There is no known history of head injury and no family history of epilepsy or insanity.

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A year before admission a seizure occurred when the patient was in a swimming-bath, and this was followed by pneumonia. He was taken to a general hospital, where he had 100 fits in a few days, followed by profound confusion and restlessness. Fits now average 40 per month.

Physical.—A short, well-developed man, with slight exophthalmos. Repeated examination of the nervous system has revealed no evidence of any organic disorder. No evidence of disease has been found in the lungs, heart or abdomen. Wassermann reaction of blood negative. Urine contains no abnormal constituents. There is no skull abnormality. Blood pressure 110/75.

CASE 17: *Idiopathic epilepsy.*—S. B—, æt. 28, admitted October 11, 1919.

Previous history.—"Convulsions" were noticed at the age of 18 months, the patient's mother attributing these to a fall on the head occurring at this time. At the age of 10 the patient was sent to an epileptic colony. There was a gradual increase in the frequency of attacks, of the typical *grand mal* type. He became very dull and retarded, and was removed to a mental hospital. Fits now average 15 per month.

Physical.—There is no evidence of organic disorder in the nervous system or elsewhere. Wassermann reaction of blood negative.

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STUDIES IN EXPERIMENTAL PSYCHIATRY.

IV: DETERIORATION OF "G" IN PSYCHOTIC PATIENTS.

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University College, London.

INTRODUCTION.

IN the earlier papers of this series Stephenson has already reported an experiment in psychiatry, in which patients at Horton Mental Hospital have been tested by psychologists of the Spearman School of Factors.* The p-factor has been introduced and its contact with psychiatric material developed. The present paper serves to introduce the general factor in cognition ("g"), and to indicate the significance of measures of the g-factor for psychiatric research.

PSYCHOLOGICAL THEORY REFLECTED IN PSYCHIATRIC EXPERIMENT.

Psychiatry has long recognized the need for estimates and measures of the cognitive abilities. In the case-sheets of patients admitted to mental hospitals there appear regularly statements about the intellectual capacities of the patient at the time of admission. These range from cautious records of ascertained facts—the patient "reads and writes well", "he was unable to tell where he was born, when he left school, or when he was married"—to deductions as far-reaching as "his general intellectual functions were intact", "his memory was grossly impaired". Such statements about the patients' intellectual powers are intended primarily to serve immediate practical ends. They do not lay claim to scientific exactness. For any real advance in knowledge of the cognitive abilities of psychotic subjects, quantitative measurements made under experimental conditions are essential.

During the last thirty years a considerable amount of work of this kind has been carried out by both psychiatrists and psychologists. Inevitably, of course, such investigations are affected by those doctrines concerning the nature of the human mind that are holding sway at the time of the experiment.

* Preliminary work on the measurement of "g" factor in adults was carried out at the Tavistock Square Clinic (now the Institute of Medical Psychology). Since the publication of Dr. Stephenson's papers, the investigation has been extended to patients at the Maudsley Hospital and Bethlem Royal Hospital.

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Anyone who cares to trace the vicissitudes of any particular type of test that has been used repeatedly by different investigators—such a test, for example, as that of "paired associates"*—cannot fail to be struck by the extreme sensitiveness of psychiatric experiment to contemporary psychology. This test owed its popularity in the first instance to associationist theories of mind, and if the principle of association were indeed the fundamental principle of all mental phenomena†, then a test such as that of "paired associates" might well be of pre-eminent importance.

Busch‡, a pupil of Kraepelin, used a test of this kind in 1908 in an investigation of cases of dementia præcox. His conclusions are drawn in terms of the Herbartian development of associationism: "The poor performance of this type of patient is due to their apperception having become more passive." More often, however, the interpretation of experimental results reflects the older doctrine of "faculties". Ziehen§ found in 1907 that epileptic patients were particularly weak in associating pairs of words not already connected in meaning. His conclusion that epileptic dementia is "especially characterized by weakness of memory" is typical of the multitude of unwarrantable generalizations for which "faculty" psychology has been responsible. The assumption is that memory is a separate branch of the mind, a functional unity, which acts more or less independently of other functional unities, and which can be tested adequately by a single test. Ranschburg‖ of Budapest commits the same fallacy, when he states explicitly that "the word-pair method, using words already associated, is a simple and sufficiently sensitive method of examining the extent and duration of memory". Three years later, however, we find evidence of an attitude in accord with the requirements of modern scientific procedure. In 1914 Hart and Spearman¶ published the results of experimental testing carried out at Long Grove Mental Hospital. Fuller reference to this investigation will be made later, but it is interesting in the present connection to note that among the tests used was that of "paired associates". As in Ziehen's experiment, the performance of the epileptics in word-pairs not already connected in meaning was "very bad". But in the other form of associated pairs, where the word pairs were already connected in meaning, the epileptics were not inferior to other classes of patients tested, a result which, in itself, is sufficient to show that Ziehen's broad generalization was

* A series of pairs of words (such as dog-hammer, bird-sharp) is presented to the subject, then one member of each pair is presented, and the subject is required to recall the other member of the pair.

† "Not only all our intellectual pleasures and pains, but all the phenomena of memory, imagination, volition, reasoning and every other mental affection and operation are but different modes or cases of the association of ideas."—Priestley.

‡ Busch, "Auffassung und Merkfähigkeit in der Dementia Præcox", Kraepelin's *Psych. Arbeiten*, 1908, 3.

§ Ziehen, *Die Prinzipien und Methoden der Intelligenzprüfung*, 1907.

‖ Ranschburg, *Das kranke Gedächtnis*, Leipzig, 1911.

¶ Hart and Spearman, "Mental Tests of Dementia", *Journ. of Abnor. Psychol.*, 1914.

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unwarranted. "A poor ability in some particular operation involving memory has been illegitimately taken as inefficiency of memory as a whole."*

Older and Pre-Scientific Views in Current Psychological and Psychiatric Literature.

The older, unscientific views have by no means disappeared from the field. They are implicit in the usual classification of present-day textbooks of psychology, and in the schemes suggested in psychiatric literature for the examination of patients admitted to mental hospitals. The classification of mental processes into sensation, perception, memory, attention, imagination, judgment, reasoning, is based upon observable resemblances, and is legitimate and useful. But such classifications gathered to themselves in the course of centuries implications that have crystallized into peculiarly obstructive and fallacious views, practical applications of which are definitely harmful and unjust. Classifications of mental phenomena became theories as to their cause. Theories as to cause have, in their turn, come to be regarded as causal agents actually existing; hypotheses have been hypostasized. This process has resulted in the "faculty" theory of the mind, a doctrine rooted in antiquity and still present with us, often enough openly, more often in a disguise, which may deceive even the most scientific of experimental psychologists in an unwary moment. The scientist, whatever the nature of the phenomena under investigation, looks for sequences and concurrences, or to borrow a formulation from Spearman, already quoted in this Journal by Stephenson, the scientist investigates "what follows what, and what goes with what". In as far as these "whats" are as yet unanalyzed, they must be regarded as unknown x's, as challenges to further investigation. Any other view—the view, for example, of the traditional "faculty" psychology—raises false concepts, which veil the need for deeper analysis.

Dangers of the Pre-Scientific Attitude in Practice.

On the practical side the pre-scientific attitude is fraught with very real danger. When the psychiatrist or the psychologist assumes that by measuring one member of a class of mental occurrences he has obtained a measure of every member of the class, the consequences are not only absurd, they are actually harmful and misleading. If a patient fails to repeat accurately a series of six digits (one of the Binet tests for eight-year-olds), there is no justification for a report in the case-sheet that the patient has "bad memory". Or, again, a child's random efforts in trying to solve the Porteous Mazes do not warrant a report that he is "lacking in foresight". Yet damaging generalizations of this kind have been made repeatedly on as little evidence. A

* Hart and Spearman, "Mental Tests of Dementia", *Journ. of Abnor. Psychol.*, 1914.

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single test is used to measure a supposed "faculty" or "power" of the mind, the assumption being that "the two go perfectly hand in hand".* In other words, there is assumed a perfect correlation between the ability to perform a single test and the ability to perform all other operations of a more or less similar kind, or still more crudely between a single test and a supposed faculty.

The assumptions of the "faculty" psychologists were not allowed to pass unchallenged. The early associationists had already struck at the roots of the "faculty' doctrine, and later adherents of the associationist school, from Herbart onwards, state explicitly that the mind is made up of an infinite number of independent abilities. More recently Thorndike has maintained that "the mind is a host of particularized and independent faculties". "There are," he says, "only the particular connections between particular mental events and others",† a point of view that would relegate mental testing to the psychological laboratory and deprive it of all practical value, since, according to the supporters of this view, there is no correlation whatever between any two abilities, the mind being made up of an infinite number of abilities independent of one another.

The General Factor in Cognition Determined Statistically.

These two points of view, the one that there is a perfect correlation between different abilities, and the other that there is no correlation whatever between any two abilities,‡ presented psychologists with a problem, the solving of which would have implications of the greatest significance for psychology. Solution would necessarily depend upon experimental evidence, but this could not be forthcoming until some means had been discovered of obtaining measures of the actual degree of correlation between different abilities.

In the early years of the present century, methods were devised for measuring the amount of correlation between abilities—methods, in other words, for measuring the extent to which ability in one performance tends to go with ability in another performance.§ Correlation coefficients lie between + 1, perfect positive correlation—the two abilities measured would "go perfectly hand in hand", and — 1, perfect inverse, or negative correlation—the larger the measure in the one ability the smaller would be the measure in the other. If a number of different tests are given to a group of subjects and the correlations between the scores for the different tests calculated, these correlations, when arranged in a table, will, as Spearman has expressed it, "convey a

* Spearman, "'G' and After—A School to End Schools," *Psychologies of 1930*, ed. Carl Murchison, 1930.

† Thorndike, *Educational Psychology*, 1903. In later publications Thorndike expresses the view that abilities are more or less inter-correlated.

‡ For a more explicit statement of the position, the reader is referred to Spearman's contribution to *Psychologies of* 1930.

§ Spearman, "General Intelligence Objectively Determined and Measured", *Amer. Journ. Psychol.*, xv, 1904.

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surprising impression of regularity ".* If this regularity were perfect, it would make what are known as the tetrad differences of the correlations equal to zero. If r stands for correlation, and if a, b, c, d, denote any four of the abilities measured, then $r_{ab} \times r_{cd} - r_{ac} \times r_{bd}$ is a tetrad difference. If the tetrad differences are zero, *i.e.*, if $r_{ab} \times r_{cd} - r_{ac} \times r_{bd} = 0$, within the limits of the sampling error (a value that becomes progressively less with increase of population), "*then and only then* the score obtained by each person in each test tends to be resolvable into two parts. One part depends on an element or factor which remains always the same in all the abilities of the same individual. The other part depends on a second factor, which even for the same individual differs freely from one ability to another. The former factor has been named 'general intelligence' or 'general ability'. . . . However, both these names for it (especially the 'intelligence') soon appeared to go beyond the evidence so far available. For this evidence had only located the factor statistically and had not yet determined it psychologically. . . . Hence prudence recommended that the names of 'general intelligence' or 'general ability' should be replaced by the non-committal letter of the alphabet, 'g' ".† The second factor, the special ability, with which "g" is always found associated, is denoted by "s". "g" stands, then, for a general factor in ability scores that has been determined mathematically. It is legitimate now to ascertain by observation and analysis whether this factor correlates with and thus measures anything psychological. This is a very different procedure from that indicated in the earlier part of this paper as typical of the older psychologies. Now the procedure is reversed. As Spearman points out: "There is not, as in the older and still current psychology, first an ability conceived and then its measurement sought. Instead, there is first a measurement made and then the appropriate ability conceived."‡

"G" Defined Psychologically.

We have now to inquire whether the psychology of cognition helps us to *describe* that which is measured by "g" or, at least, to ascertain the conditions that determine the manifestion of "g". Spearman's *The Nature of Intelligence and the Principles of Cognition* (1923) offers a penetrating analysis of the cognitive processes. This analysis shows that there are only four ways by which items can enter the mind. By three of these processes *new* mental content is generated. By the fourth process *old* items are reproduced. The three processes whereby new mental content is generated appear to be fundamental. They are:

* Spearman, "'G' and After—a School to End Schools", *Psychologies of 1930*, ed. Carl Murchison, 1930.

† *Ibid.*

‡ *Ibid.*

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(1) The apprehension of experience: A person tends to be aware of what goes on in his own mind.*

(2) The eduction of relations: When a person has in mind any two or more items, he has more or less power to bring to mind any relation that essentially holds between them.†

(3) The eduction of correlates: When a person has in mind any item together with a relation, he has more or less power to bring to mind the correlative idea.‡

These three processes, which have been designated " noegenetic " processes, account for all mental content that is not old content reproduced.§

The fundamental difference between noegenetic processes on the one hand and reproductive processes on the other is sometimes very clearly manifested in certain individuals in whom reproduction of old mental content functions normally, whereas the noegenetic processes of eduction function only at a very low level. The writer has recently tested a feeble-minded girl, whose low scores in tests requiring the generation of *new* mental content by eduction confirmed the medical diagnosis of " feeble-minded ". In a test which depended to a considerable extent upon the reproduction of old mental content, her achievement was well within the normal range. Another striking instance is that of a woman, æt. 64, suffering from melancholia. Her conversational powers appeared excellent, and gave evidence of a mind well informed and stored with rich and varied experiences. Her performance in the Terman vocabulary test, which demanded the reproduction of knowledge acquired long ago, was excellent. But when she was confronted with very simple tests requiring the generation of *new* mental content, her achievement was at the level of imbecility. The general impairment consequent upon senility, in conjunction with her mental illness, had seriously affected those abilities which depend upon eductive processes, leaving untouched, apparently, processes whereby old mental content is revived.

Now, it is precisely with those abilities which depend upon eduction that " g " occurs.‖ The statistical treatment of the data provided by " intelligence " tests, together with the qualitative analysis of the mental processes involved in performing the tests provides abundant evidence in favour of the view that " g " is present wherever the ability measured requires the generation of new mental content *by the eduction of relations or correlates.*

* Spearman, "'G' and After—a School to End Schools", *Psychologies of 1930*, ed. Carl Murchison, 1930.

† *Ibid.*

‡ *Ibid.*

§ " The title 'noegenetic' is given to all processes that possess two virtues connected respectively with the words 'noetic' and 'genetic'. By 'noetic' is here meant all knowing (perception or thought) immediately based upon adequate grounds. 'Genetic' covers all knowing in so far as it generates any content originally (that is to say, independently of mere reproduction)." *Ibid.*, footnote, p. 348.

‖ For experimental evidence the reader is referred to Spearman, *The Abilities of Man*, 1927.

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Measures of " g ".

If we inquire which tests measure " g " with the greatest degree of accuracy, the answer will obviously be : Tests that give scores with high " g " saturation, that measure abilities where the influence of " g " is predominant. Processes other than those of eduction must be excluded from any critical rôle—a condition by no means easy to satisfy. The reproduction of past experience as a factor in the solution of tests vitiates to some extent nearly all the tests in current use. Every test that depends in part upon scholastic training or upon vocabulary is open to criticism on this score. The pictorial and performance tests specially devised to overcome this difficulty have failed to extricate themselves from it. In addition to the need for avoiding vitiation by past experience, there is the further requirement that the abilities measured shall not involve any other broad factor over and above " g ". Recent experimental work by Stephenson seems to indicate the presence of a broad factor over and above " g " in all verbal tests. On the other hand, only one common factor (" g ") appeared in tests of a perceptual kind. After testing over a thousand subjects with verbal and non-verbal tests, Stephenson concluded that the evidence was against any group factor in the non-verbal sub-tests, buf was in favour of one group (" V ") factor extending rather evenly throughout the verbal sub-tests.*

The future would seem, then, to lie with non-verbal tests, provided that the difficulty of excluding past experience from a critical rôle can be overcome. The foundation for the development of such tests has already been laid by Line's work on visual perception.† He takes as his starting-point Spearman's analysis of sensory perception into four processes :

(*a*) The apprehension of sensory experience.
(*b*) The eduction of relations.
(*c*) Supplementation due to the reproduction of past experience.
(*d*) Supplementation due to the eduction of correlates.‡

This analysis reveals the presence in perception of all four of the fundamental processes of cognition, three noegenetic and one reproductive, referred to earlier in this paper. Upon the basis of this analysis, Line distinguishes *primary perception* (" a " and " b " above) from *secondary perception* (" c " and " d "): " In the primary stage the individual's past experience, as such, plays little or no part. He apprehends the character of his sensory experience, and educes relations between these characters."§ For the purposes of his investigation into the development of visual perception in children, Line constructed a series of tests consisting of two-dimensional spatial figures

* *Journ. of Educ. Psychol.*, xxii, p. 349.
† W. Line, " The Growth of Visual Perception in Children ", *Brit. Journ. Psychol., Mon. Supp.*, xv, 1930.
‡ Spearman, *Nature of Intelligence and Principles of Cognition*, 1923.
§ W. Line, *ibid.*

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involving *primary perception* only. Different degrees of difficulty were introduced by varying the complexity of the relations.* The results of Line's research gave a new direction to the development of g-tests. The correlation between the scores on his perceptual tests and g-scores was as high as 0·89. Within the limits of experimentation there was no indication of a group factor —a finding since corroborated by Stephenson† and Fortes.‡ Moreover, by keeping within the sphere of primary perception, the difficulty of past experience had at last been overcome.

G-Tests Used in the Horton Experiment.

For the psychiatric experiments reported in this series of papers a set of non-verbal g-tests was constructed of the kind indicated in the preceding paragraph. Of the twenty tests comprising this set, ten were identical with the tests used by Line, four were adapted from Fortes, and six were contributed by the experimenters. The tests selected present a wide range of difficulty. At the one extreme there are tests that can be solved by the mentally defective; at the other extreme there are tests difficult enough to try the intelligence of honours graduates. Two tests are given below as samples. Of these, Test A is easy, while Test B§ is one of the more difficult tests in the series. In each test the four " right " figures are like each other in respect of some relational system that is common to them all. The four " wrong " figures differ from the " right " figures in that this relational system is not present. After the subject has examined the " right " and " wrong " figures of a test, he is presented, one at a time, with a series of ten " test " figures, in some of which the critical relational system is present, and from some of which it is absent. He is required to say of each of the " test " figures whether it is " right " or " wrong ". The arrangement of the material and the method of presenting it are specially designed for the testing of psychotic subjects. The figures are very clearly presented, the instructions given to the subjects and the responses required from them are extremely simple. Moreover, the superiority of this type of test in respect of freedom from the disturbing influences of past experience gives it a peculiar advantage in psychiatric work. Verbal and pictorial tests are liable to arouse in certain types of psychotic subjects a flow of associated ideas, which the patient is unable to control, and which makes it impossible for him to perform satisfactorily a test that may be intellectually within his grasp. Tests based solely upon primary perception give little or no opportunity for disturbances of this kind.

* For examples of Line's tests, see p. 712.

† *Journ. of Educ. Psychol.*, March, 1931.

‡ Fortes, " Perceptual Tests of ' General Intelligence ' for Inter-Racial Use ", *Trans. Roy. Soc. South Africa*, xx, part iii, 1932.

§ Adapted from a test invented by Dr. Fortes and reproduced here with his permission.

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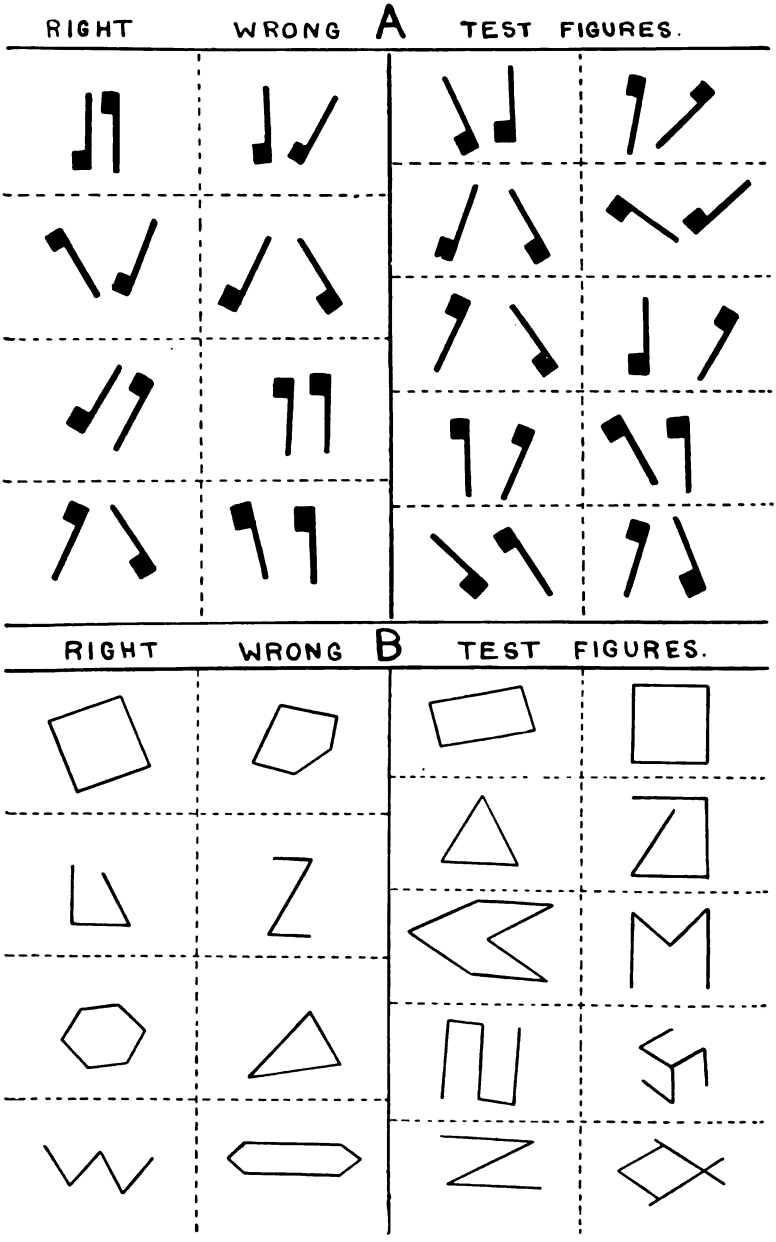

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G-Scores of Horton Subjects.

Chart I shows the g-scores of 116 Horton patients. The p-scores of these patients have been given and discussed by Stephenson in the second paper of this series. The same lettering is used here, so that it is possible to follow the performances of any one patient in all the tests applied; for instance, the dementia præcox patient A has p-score 64, g-score 15 (Chart I), vocabulary score 12 (Chart II), "memory" score 10 (Chart V). All the tests are scored on a scale running from zero to 20. A few (13) of the patients tested by Stephenson were unable to do the g-tests, although capable of performing the very simple operations required by the p-tests.

Agreement of G-Scores with Medical Estimates of Intelligence.

The clinical notes supplied by Dr. D. M. Kapp* included an estimate of the intelligence of each patient at the time of testing. The estimates were given in terms of the following 5-point scale: really good, fairly good, medium, fairly bad, really bad. In 61% of the patients tested there is a fair agreement between the psychiatrists' estimates of intelligence and the patient's score in the g-test. In 5 cases the g-scores indicated greater latent intelligence than observation of the patient had led the psychiatrists to expect. These under-estimations, as compared with the test results, occurred in three cases of dementia præcox (A, J, R), one case of melancholia (E), and one case of paranoia (delusional R). Dementia præcox A had good g-ability, but this was obscured by extremely childish and irrational behaviour. The dementia præcox cases J and R were dull, listless and apathetic. In attempting to estimate the g-ability of shut-in cases of this kind, the doctors had, as they themselves pointed out, very little to go upon. Some of the shut-in cases, amongst them J and R, could, however, be persuaded to co-operate in the test situation and to perform the g-tests satisfactorily. Melancholia E was another dull and apathetic patient. Her intelligence was rated by the doctors as "really bad", whereas the g-tests gave her a score definitely above the scores made by the non-psychotic mental defectives and corresponding to a rating not lower than "fairly bad". Delusional R was a severe case of paranoia, and her gross impairment of judgment was shown by the test results to be due to factors other than low g-ability.

The relatively large number of cases (34%) in which the test score graded the g-ability considerably lower than the psychiatrists' estimate invite serious attention. The question arises whether the tests failed to evoke the ability actually present in these patients, or whether low g-ability was screened by other factors which made a true estimate based upon observation difficult. In a certain number of cases tested, it was clear that the test situation had

* This research would have been impossible without the generous and most effective co-operation given us by Dr. D. M. Kapp (*née* Wilkins), to whom our especial thanks are due.

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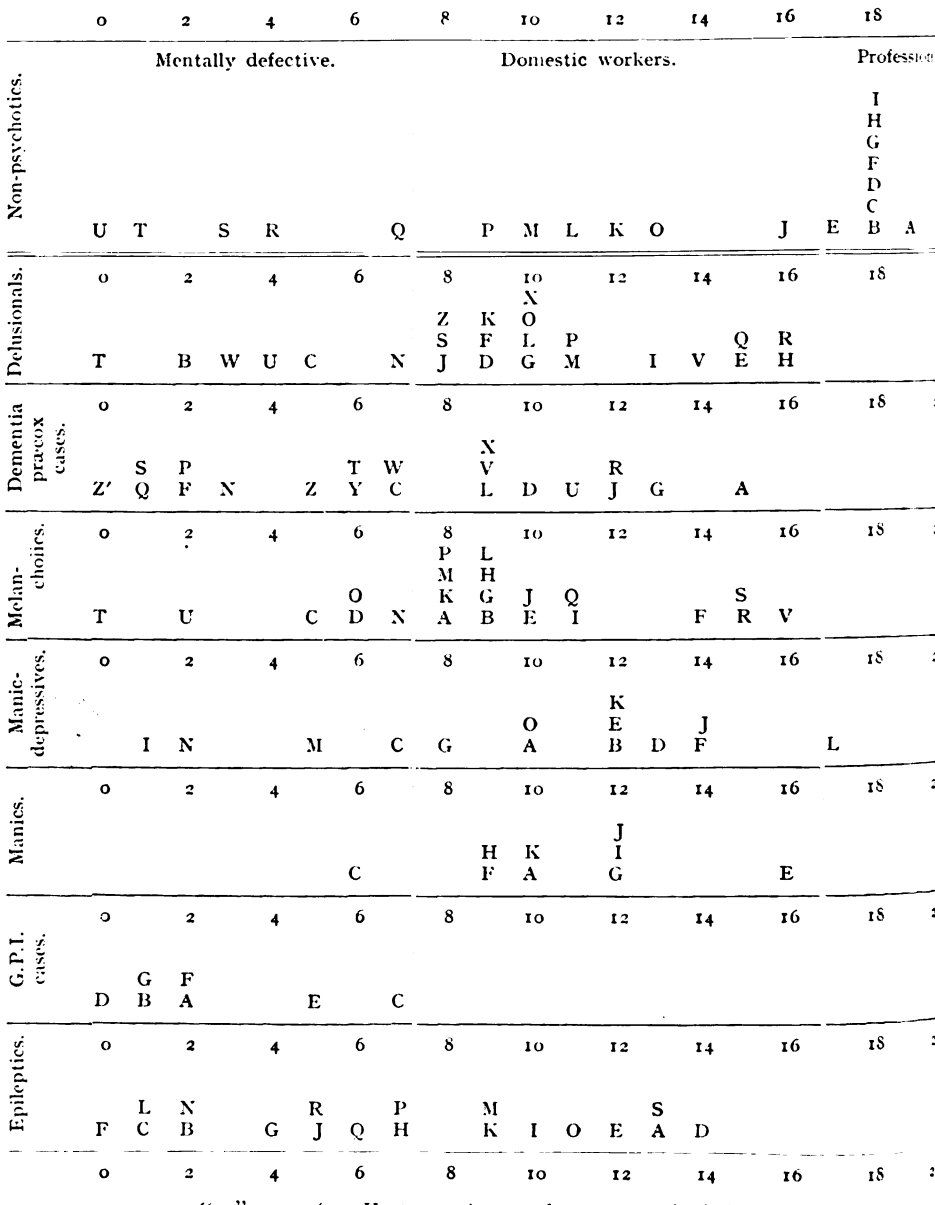
CHART I.


0 2 4 6 8 10 12 14 16 18 20
Mentally defective.
Domestic workers.
Professional.
Non-psychotics.
U T S R Q P M L K O J E I H G F D C B A
Delusionals.
T B W U C N Z S J K F D X O L G P M I V Q E R H
Dementia præcox cases.
Z' S Q P F N Z T Y W C X V L D U R J G A
Melan-choirs.
T U C O D N P M K A H G B L J E Q I F S R V
Manic-depressives.
I N M C G K E A B D J F L
Manics.
C H F K A J I G E
G.P.I. cases.
D G B F A E C
Epileptics.
F L C N B G R J Q P H M K I O E S A D

"g" scores (100 Horton patients and 20 non-psychotics).

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not been satisfactory, and that the score could not be accepted as reliable. These cases have not been included in the experimental group. There may, of course, have been other cases of failure to give satisfactory co-operation in spite of appearances to the contrary. An examination of the test results of cases, in which the doctors' rating is an over-estimation as compared with the g-score, reveals that in the majority of these the vocabulary score is average or superior. It is conceivable that the retention of knowledge, and possibly also of habits of behaviour, acquired before the onset of illness, may obscure present low g-ability. The present poorness of "g" would only be clearly apparent when the patient was faced with new and unfamiliar situations which could not be met adequately by responses acquired before the deterioration of "g".

Comparison of the Horton Subjects with Non-Psychotics in Respect of "g".

Chart I contrasts the g-scores of Horton patients with the scores made by a group of non-psychotic women. Nine of these were professional women, seven were in various grades of domestic service, and five were attending occupation centres for the mentally defective. The g-abilities of this group ranged from very superior ability on the one hand to the border-line of imbecility on the other. No mentally defective subject made a g-score of more than 7, no professional worker made a score of less than 17; the scores of the domestic workers ranged from 9 to 16.

It is significant that only one psychotic subject (manic-depressive L) made a score as high as 17, although not less than twenty of the women tested at Horton had been in careers open only to women of superior intelligence. In the middle section, *i.e.*, that including the scores of the non-psychotic domestic workers, the majority of the scores made by the psychotics "range" from 8 to 12 in the lower half of the section. As many as 40% of the psychotics make scores as low as those of the mentally defective of the non-psychotic group, although only three, or possibly four, of the psychotics were cases of congenital mental defect.

The g-scores of the psychotic subjects present in broad outline a picture of impairment or deterioration of "g" which confirms the results obtained by Hart and Spearman at Long Grove Mental Hospital in 1914.*

g-Ability Before the Onset of Illness.

In order to arrive at any conclusion as to the degree of deterioration† of "g" associated with the pathological condition, it was necessary to obtain

* Hart and Spearman, "Mental Tests of Dementia", *Journ. of Abnor. Psych.*, 1914; see also p. 733.

† "Deterioration" is used in this paper in a somewhat wider sense than is usual in psychiatry. It indicates here a loss or decrement that may be either temporary or permanent.

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evidence of the amount of g-ability possessed by each subject before mental illness set in. Records of school progress and of early employment may provide indications of the patient's earlier capacity, but reliable information of this kind is often lacking. Even when full and accurate records are available, they may be misleading, for type of education and employment are often conditioned by the economic situation and by family tradition, rather than by the capacity of the individual. It was clear that estimates of earlier " g ", based upon case-histories, would often be wide of the mark. A quantitative measure was needed such as that provided by test scores. Babcock,* who recently investigated mental deterioration in paretic patients at Manhattan State Hospital, U.S.A., found that the Terman vocabulary test gave a useful measure of the amount of intelligence which had been present before deterioration set in : " Words when once learned are not quickly forgotten, and remain as indications of the ability a person once had."† The disparity between the score made by a subject in the vocabulary test and the score made by him in a battery of varied intelligence test items was used by Babcock as a measure of the extent of deterioration associated with the paretic condition. Her subjects were tested immediately before " malaria " treatment, and again three months later. Those patients who, according to the medical view, were improving, showed at the second testing marked gains in their intelligence test-scores, and consequently a smaller degree of impairment as measured by the difference between these scores and the scores for vocabulary. Patients who were not improving showed either no change, or an increase in the amount of impairment measured by the tests. Babcock's results seemed to warrant the inclusion of the Terman Vocabulary Test in the present research, with the object of exploring further the value of this method of measuring deterioration of " g ".

G-Deterioration in Psychotic Subjects.

The picture presented by the vocabulary scores of the Horton subjects (Chart II) contrasts strikingly with that of the g-scores. The total vocabulary scores show a normal distribution about an average which is the same as the average for non-psychotic adults according to Terman's norms, which are given at the head of the chart. These results support Babcock's view that " words when once learned are not quickly forgotten, and remain as indications of the ability a person once had ". The normal distribution of the scores about an average that is the same for non-psychotic adults, indicates that before deterioration set in the psychotic group did not differ from the rest of the population in respect of intelligence. The vocabulary score of each case was accepted as an indication of the amount of g-ability possessed

* Babcock, " An Experiment in the Measurement of Mental Deterioration ", *Arch. of Psychol.*, No. 117, New York, 1930.

† *Ibid.*

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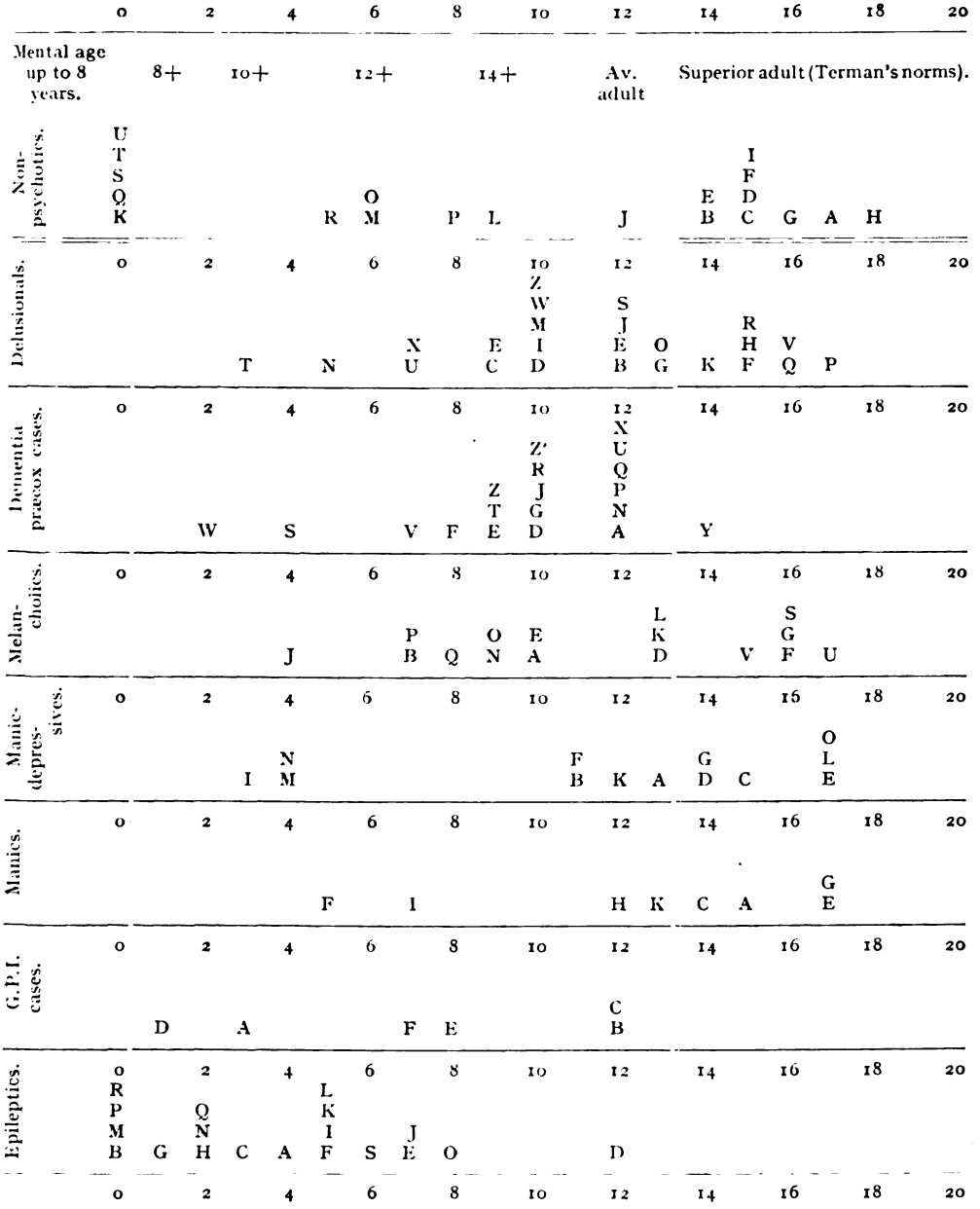
Chart II.



Vocabulary test scores (100 Horton patients and 20 non-psychotics).

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by the patient before the onset of illness, and the score made in the perceptual tests of "g" as the measure of the patient's "g" at the time of testing. Vocabulary score minus g-score* was taken as the measure of deterioration of "g". The subjects were allotted g-deterioration scores on a 0 to 7 scale, 0 indicating no deterioration, 1 slight deterioration, 2 rather more deterioration, and so on to 7, which denotes the largest amount of deterioration measured.

There were, however, certain cases in which the vocabulary score could not be accepted as an indication of the amount of g-ability formerly present. These were cases of widespread mental dilapidation, such as is found in terminal dementia and in some cases of senility, where scores were very low in all tests of cognitive abilities. It is probable that the vocabulary scores of G.P.I. patients cannot be accepted at their face value as measures of earlier "g". Both in the vocabulary test and in the test of memory for recent impressions of words, numbers and pictures,† the average performance of this group is lower than that for any other group (with the exception of the epileptics). There seems, therefore, to be some loss of capacity for reproducing past impressions, whether recent or remote. If this is so, the vocabulary scores of these patients will under-estimate their original g-ability and, consequently, their g-deterioration scores will under-estimate the amount of deterioration actually present. Neither can the earlier g-ability of epileptics be measured by a vocabulary test, for epileptics appear to suffer from some form of specific verbal disability. As we have already noted, Ziehen, and later, Hart and Spearman, had found that epileptics were particularly poor in the ability to associate words. The present investigation showed them to be handicapped both in the vocabulary test and also in memory for single words. There is no evidence yet to show whether this verbal weakness is directly associated with epilepsy, or whether it is a result of the limits set by their illness to attendance at school and to social experience generally.

There remained 70 cases in which it seemed permissible to accept the vocabulary score as indicative of the amount of g-ability present before the onset of illness. Of these, 50·5% show deterioration of "g" as measured by the difference between the vocabulary and the g-scores.

Agreement of the g-Deterioration Measures with the Psychiatrist's Ratings of Degree of Illness.

It seemed reasonable to expect that the more serious the condition of the patient, the greater would be the degree of deterioration measured in this way. A comparison of the g-deterioration measures with the psychiatrists' ratings of the patients for degree of illness (on a 5-point scale—really good,

* After the scores had been scaled for correlations.

† See pp. 730–31.

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fairly good, medium, fairly bad, really bad), bears out this supposition in the main.

Of the patients considered by the medical officers to be in a " fairly bad " or " really bad " condition, as many as 89% showed g-deterioration by our measure. Of those rated as " medium ", 74% showed g-deterioration, while of those held to be in a " fairly good " or " really good " condition, 45% showed deterioration of " g ". It must, of course, be remembered that all the patients tested at Horton were certified as insane, and that the terms " fairly good " and " really good " are relative. It is interesting to note that not one of the four patients discharged shortly after the testing showed g-deterioration.

It is clear from these figures that the more serious the condition of the patient, the greater is the frequency of g-deterioration as measured by the vocabulary score minus g-score method.

The Psychiatric Material (Horton) in Terms of g-Deterioration.

The following table (I) gives in percentages the numbers of g-deteriorated cases in each of the psychiatric categories :

Table I.

Category.	Number tested.	Percentage showing measurable g-deterioration.	Percentage showing g-deterioration, whether measurable or associated with impairment of other cognitive abilities.
G.P.I. cases (malaria treated)	5	80%	100%
Melancholics	17	41%	82%
Manics	8	62·5%	75%
Delusionals	23	56·5%	69·5%
Dementia præcox cases	20	45%	60%
Manic-depressives	12	41·5%	58%
All cases	85	50·5%	70%

The psychiatric categories do not differ materially in the average *amount* of measurable g-deterioration per deteriorated case. There appear, however, to be marked differences in the *frequency* of cases free from deterioration found in each category. It should, of course, be remembered that each category is represented by only a small number of subjects; particularly is this the case in the manic-depressive, mania and G.P.I. groups.

All G.P.I. (malaria-treated) cases tested showed g-deterioration, and reference to Chart I will show that in no instance does the amount of " g "

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exceed that of non-psychotic women in occupation centres for the mentally defective.

As many as 82% of the *melancholias* showed impairment of "g". The subjects in this group were all over fifty years of age, and in many of them senility, with consequent widespread mental deterioration, was superimposed upon melancholia. There is no evidence, however, that loss of "g" in this group is to be ascribed solely to senility.

Two of the eight cases of *mania* tested showed no g-deterioration. Both (manias E and I) were rated by the medical officers as "fairly good" in respect of degree of illness. Mania I is the only patient in this group of whom the doctor's notes record "moderate degree of insight".

Of the cases classified as *delusional*, including non-systematized and systematized (paranoiac), 30·5% were free from g-deterioration. Of these, "delusionals" E and L proved eventually to be non-psychotic; the diagnoses were changed to "psychasthenia" (E) and "hysteria" (L), and the patients were either discharged or transferred. "Delusional" X, a case of confusional insanity, was discharged shortly after the testing as "recovered". Delusional H, a paraphrenic, was rated by the doctors as being "fairly good" in respect of degree of illness and had a certain degree of insight. Three other delusionals, M (non-systematized delusions), Q (dementia paranoides) and R (paranoia), showed no measurable g-deterioration, although rated by the doctors as "fairly bad" (M and Q) and "really bad" (R).*

As many as 40% of the tested cases of *dementia præcox* showed no g-deterioration. This group proved to be particularly interesting on account of the clearly defined relation between the g-deterioration score and the p-score. The cases in this category fall into three groups:

(1) *No* g-deterioration and p-score 1 to 4. Cases A, G and J rated as "fairly good" in respect of illness, R rated as "medium" and "improving", D and V (possibly a case of paraphrenia) rated as "medium", and U, a puerperal case, discharged as "recovered" shortly after.

(2) g-Deterioration and p-score very low (0). Cases X, over-active, very voluble, at times truculent, and Q, very impulsive and liable to smash things.

(3) g-Deterioration with p-score over 4. Cases P, S, T, Y and Z rated as "medium", and cases C, F, N, W and Z rated as "fairly bad" in respect of degree of illness. The "fairly bad" cases all show a g-deterioration score of 2 or more.

One case, dementia præcox L (puerperal), falls out of this scheme. Like the only other puerperal case tested (dementia præcox U), she showed no g-deterioration, but her p-score was 7.

* Of the three cases of paranoia tested, the remaining two (P and S) showed g-deterioration.

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In the *manic-depressive* group, cases free from g-deterioration were more frequent (42%) than in any other category, though they do not differ appreciably from the dementia præcox group in this respect. Three of the manic-depressives (D, F and L) showing no measurable g-deterioration were discharged as "recovered" shortly after the testing. The remaining two free from g-deterioration were rated as "fairly good" in respect of illness.

A Summary of Horton Cases Showing *no* g-Deterioration.

As only 30% of the 85 patients* tested were undeteriorated in respect of "g", it is a safe conclusion that the proportion relative to the total hospital population was very much smaller, and that among patients in this type of mental hospital, unimpaired g-ability is exceptional.

An analysis of the 25 cases free from g-deterioration shows that this group comprises:

(1) The only cases tested who proved eventually to be non-psychotic and who were therefore discharged or transferred.

(2) All cases discharged as "recovered" shortly after the date of testing.

(3) The only puerperal cases tested.

(4) All dementia præcox cases with a p-score not less than 1 and not greater than 4.

(5) Six cases rated by the medical officers as being "fairly good" in respect of degree of illness: paraphrenic H, melancholic B, manic-depressives B and K, manics E and I.

(6) Two melancholics rated as "medium", one of them "improving"; one "fairly bad" case of dementia paranoides and one "really bad" case of paranoia.

The "g" and Vocabulary Tests Applied to Patients at Maudsley Hospital and at Bethlem Royal Hospital.

Subsequently, the g-test and the Terman vocabulary test were applied to 100 more cases, of whom 60 were patients at the Maudsley Hospital, 26 were at Bethlem Royal Hospital and 14 at Horton. In the selection of our second group, an attempt was made to avoid the complication of senility. With three exceptions the patients now tested were under 55 years of age. On this occasion not all our subjects were psychotic. We included for the purposes of our investigation a certain number of psycho-neurotic cases.

The following classification was adopted:

(1) Hysterics: 22 cases.

(2) Anxiety neurosis cases: 7 cases.

* Exclusive of epileptics.

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(3) Schizophrenes (including dementia præcox) : 29 cases.

(4) Depressives (including manic-depressives in the depressive phase) : 32 cases.

(5) Manics (including manic-depressives in the manic phase) : 10 cases.

Charts III and IV give the " g " and vocabulary scores of these patients* and contrast them with the scores of the non-psychotic group. Five subjects make scores that place them in the same category for " g " as the non-psychotic professional women. In the middle section, *i.e.*, that of the non-psychotic domestic workers, the majority of the scores made by psychotic and neurotic subjects range from 12 to 16 in the upper half of the section. Ten subjects only in this group (six depressives, two cases of dementia præcox, one case of " schizophrenic excitement ", and one of paranoia) make scores as low as those of the mental defectives of the non-psychotic group. Amongst the 100 cases of our second group there were no congenital defectives.

Although the distribution of the g-scores indicates that a certain amount of g-deterioration is present, it can be seen at a glance that this group is definitely better in respect of " g " than the group consisting solely of Horton patients (Chart I). Since the vocabulary scores of the second group (Chart IV) present the same picture (as a whole) as those of the Horton group (Chart II), apart from the epileptics and the G.P.I. patients, one may conclude that the superiority of the second group in respect of " g " is due to a smaller degree of g-deterioration, and not to any initial superiority in g-ability.

G-Deterioration in Maudsley and Bethlem Patients.

Only 5 of the 100 cases of our second group showed sufficiently low scores in the " g ", vocabulary and memory† tests to warrant the assumption of widespread impairment of cognitive abilities :

Manic, 84 (Horton).

Depressive, 97 (Maudsley). Later diagnosed as G.P.I.

Depressive, 76 (Maudsley). Doctor's note observes : " almost gives the impression of dementia ".

Depressive, 86 (Bethlem). Senility factor probable ; æt. 61.

Schizophrene, 94 (Bethlem). Partially recovered.

In these cases it was not considered admissible to apply the vocabulary minus g-score method of measuring g-deterioration.

One patient (hysteria, 82) was not fully tested for " g ", and has therefore been omitted.

It was possible to apply the g-deterioration measure (vocabulary score

* Each patient is designated by a number.
† See below.

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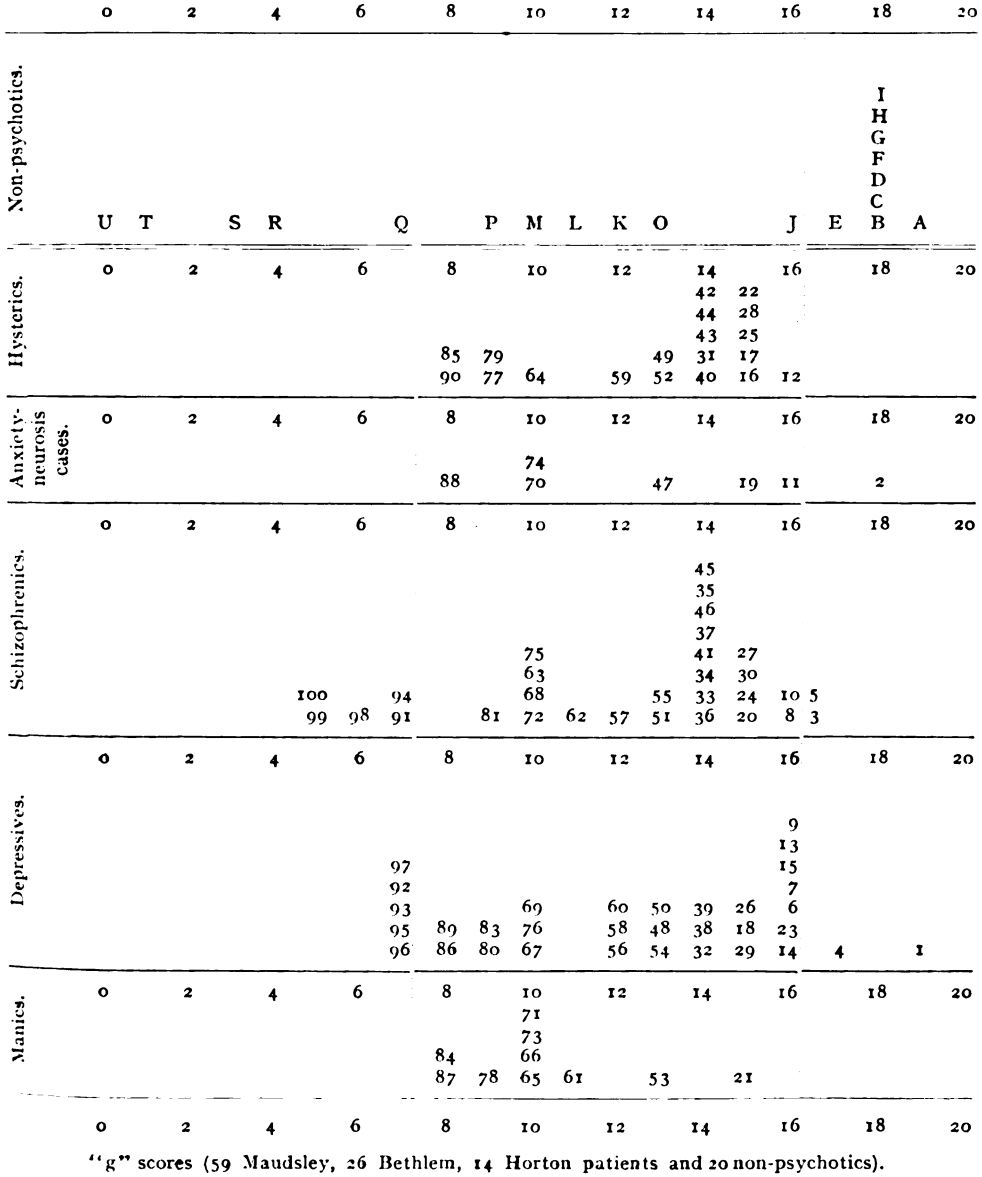
Chart III.



"g" scores (59 Maudsley, 26 Bethlem, 14 Horton patients and 20 non-psychotics).

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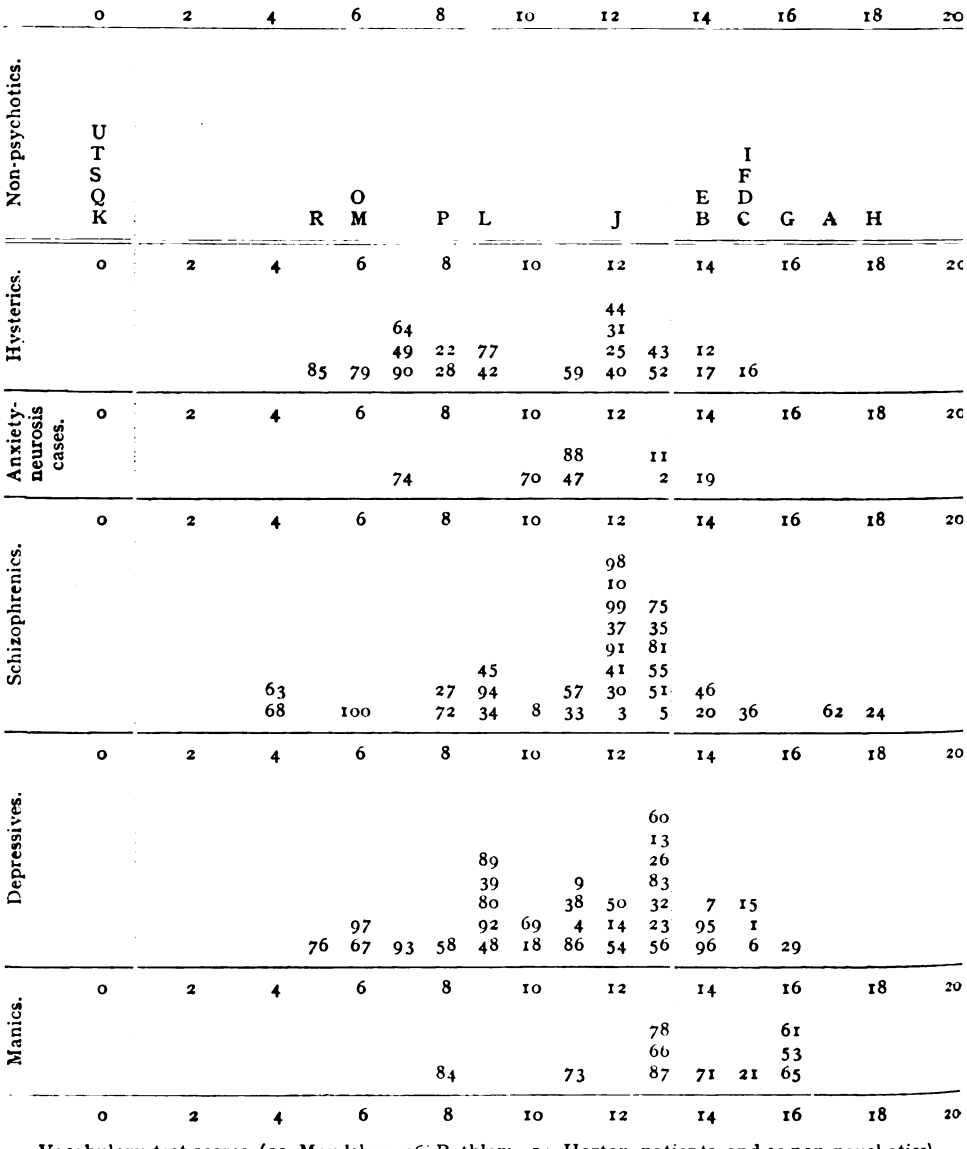
Chart IV.


0 2 4 6 8 10 12 14 16 18 20
Non-psychotics.
U T S Q K
R O M P L J E B I F D C G A H
Hysterics.
Anxiety-neurosis cases.
Schizophrenics.
Depressives.
Manics.

Vocabulary test scores (59 Maudsley, 26 Bethlem, 14 Horton patients and 20 non-psychotics).

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minus g-score) to the remaining 94 cases. Table II shows in percentages the number of cases showing g-deterioration in each of the categories of patients tested at the Maudsley and at Bethlem.

TABLE II.

Category.	Number tested.	Percentage showing measurable g-deterioration.	Percentage showing g-deterioration, whether measurable or associated with impairment of other cognitive abilities.
Hysterics (including nine cases of conversion hysteria)	21	0%	0%
Anxiety neurosis cases	7	14% (one case only)	14%
Schizophrenes	18	22%	22%
Depressives	33	12%	15%
Manics	7	86%	86%
All cases	86	18%	22%

The g-deteriorated cases were in a small minority, 22%, as compared with 70% of the Horton subjects.

No case of *hysteria* and only one of *anxiety neurosis* showed g-deterioration: Anxiety neurosis 88 (Maudsley). Emotional tone depressed; at times behaved as if dazed; g-deterioration slight (score = 1).

Four subjects in the *schizophrenic* group showed g-deterioration:

(1) Schizophrenia, 98 (Bethlem). Mental instability after severe illness; delusions, hallucinations, disorientated, retarded; g-deterioration considerable (score = 3).

(3) Schizophrenia, 91 (Maudsley). Schizophrenic excitement, prognosis poor; g-deterioration (score = 2).

(3) Schizophrenia, 24 (Maudsley). Schizophrenic state; no insight; g-deterioration (score = 1).

(4) Schizophrenia, 75 (Bethlem). Paranoid reaction with depression; at time of testing without any insight; g-deterioration (score = 1).

g-Deterioration was found in nine cases of *depression*, in four of them associated with a certain degree of widespread impairment. Measurable g-deterioration was present in the following:

(1) Depression, 96 (Bethlem). Suicidal, retarded; no improvement after five months; g-deterioration considerable (score = 3).

(2) Depression, 71 (Bethlem). Suicidal, improving; g-deterioration (score = 2).

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(3) Depression, 83 (Maudsley). Simple type of recurrent depression; at time of testing getting worse after period of improvement; g-deterioration (score = 2).

(4) Depression, 95 (Bethlem). Suicidal; improving; g-deterioration slight (score = 1).

(5) Depression, 92 (Maudsley). Suicidal, retarded, following pregnancy; convalescent at time of testing; g-deterioration slight (score = 1).

Of the seven cases in the *mania* group, as many as five show g-deterioration, giving a percentage (71%) approximately the same as that found in the Horton group of manias (75%). The cases showing g-deterioration are: "manias" 65, 87 and 53 at Bethlem, all manic-depressives in a slightly manic phase. Cases 65 and 87 have a g-deterioration score of 2; Case 53 has a score of 1. "Manias" 66 and 78 at the Maudsley, diagnosed as being in a "state of excitement"; g-deterioration in both is slight (score = 1). The two following cases of "mania" were free from g-deterioration:

"Mania" 9 (Bethlem). Manic-depressive; steadily improving.

"Mania" 21 (Maudsley). "Hypomania"; æt. 18.

No case at Maudsley makes a g-deterioration score higher than 2 (on a 0 to 7 scale); no case at Bethlem exceeds a score of 3, whereas the Horton scores, excluding those of senile patients, range from 1 to 5.

Horton, Maudsley and Bethlem Patients Compared in Respect of Frequency and Amount of g-Deterioration.

The following table shows in percentages: (1) the number of cases showing measurable g-deterioration; (2) the total number of cases showing g-deterioration, whether measurable or associated with widespread impairment (and therefore not measurable by our method); (3) the average amount of measurable g-deterioration per deteriorated case for Horton, Bethlem and the Maudsley respectively:

Hospital.	Number tested.	Percentage showing measurable g-deterioration.	Percentage showing g-deterioration, whether measurable or associated with impairment of other cognitive abilities.	Average amount of measurable g-deterioration per deteriorated case.
Horton	85	50·5%	70%	2·44
Bethlem	26	30·7%	38·4%	1·85
Maudsley	60	11·67%	15%	1·29

If our method of measuring g-deterioration is sound, we should expect to find less measurable g-deterioration at Bethlem than at Horton, since Bethlem admits only such cases as are expected to recover, and less still at

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the Maudsley, where only voluntary cases are treated. It is precisely this relation between the three hospitals that is shown by the frequency and by the amount of the g-deterioration scores given in the above table. This result supports the agreement of the g-deterioration scores with the doctor's ratings,* and supplies a second criterion of the practical usefulness of the method.

The "Memory" Tests.

In addition to the visual-perceptual test of "g" and the Terman vocabulary test, there were included tests of memory for recent impressions of words, numbers and pictures. The memory test material consisted of cards, on each of which were two words (not associated in meaning), two numbers, or two pictures. Four of the word-cards were shown to the subject in succession, each card being exposed for four seconds. The subject was then required to name in any order as many of the words as she could remember. A further series of four word-cards was then shown in the same way. A similar procedure was followed with the numbers and pictures. The tests were scored on a "0 to 20" scale.

In the successful performance of these tests two main processes are clearly involved: (1) perception, *i.e.*, the initial awareness of the words, numbers or pictures; (2) the reproduction of the items thus experienced. It is known that, given adequacy of stimulus and soundness of the sense-organs involved, clearness of perception is largely a function of g-ability.† Reproduction, on the other hand, is independent of g-ability.‡ The act of reproducing past experience under test conditions is conative. Its occurrence is, of course, proof that the impressions gained in the initial experiences have been retained. There is a correlation of + ·35 between the memory test scores and the "g" test scores, indicating that performance in the memory tests is to some extent determined by g-ability. The question arises to what extent a subject's performance in the memory tests is to be accounted for by her g-ability, and to what extent by processes involved in reproduction. Since the correlation between the memory scores and the g-scores is known, it is possible to eliminate "g" from the memory scores, that is, to deduct from each subject's score in the memory test that part of the total score which is contributed by the general factor ("g").

The "Memory" Scores with "g" Eliminated.

Charts V and VI give the memory scores (with "g" eliminated) of the patients tested, and contrasts them with those of the group of non-psychotic

* See p. 718.

† Line, "The Growth of Visual Perception in Children", *Brit. Journ. Psych., Mon. Suppl.*, xv, 1930.

‡ Spearman, *The Abilities of Man*, Ch. XVI, 1927.

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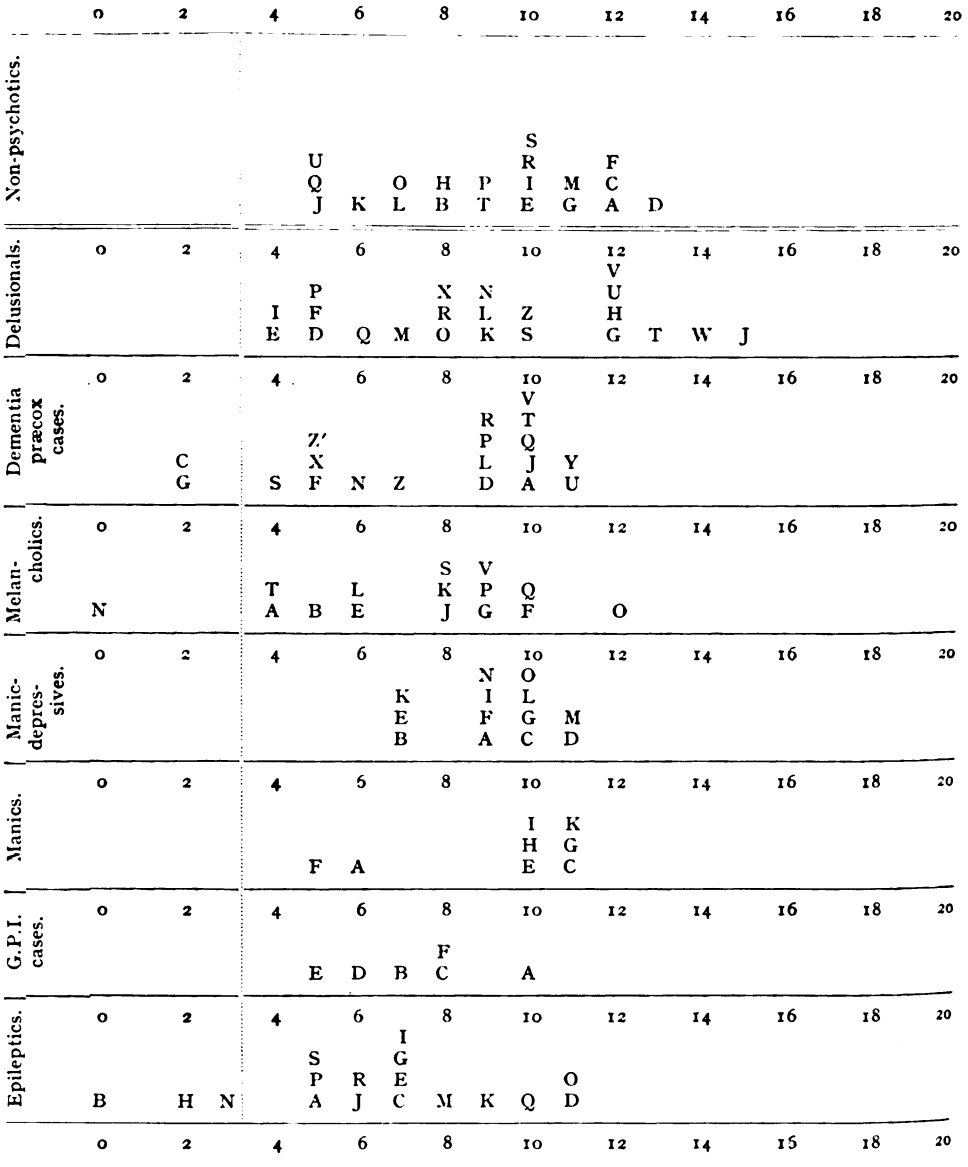
Chart V.


0 2 4 6 8 10 12 14 16 18 20
Non-psychotics.
U Q J K O L H B P T S R I E M G F C A D
Delusionals.
I E P F D Q M X R O N L K Z S V U H G T W J
Dementia præcox cases.
C G S Z′ X F N Z R P L D V T Q J A Y U
Melan-cholics.
N T A B L E S K J V P G Q F O
Manic-depres-sives.
K E B N I F A O L G C M D
Manics.
F A I H E K G C
G.P.I. cases.
E D B F C A
Epileptics.
B H N S P A R J I G E C M K Q O D
0 2 4 6 8 10 12 14 15 18 20

Memory test scores (100 Horton patients and 20 non-psychotics).

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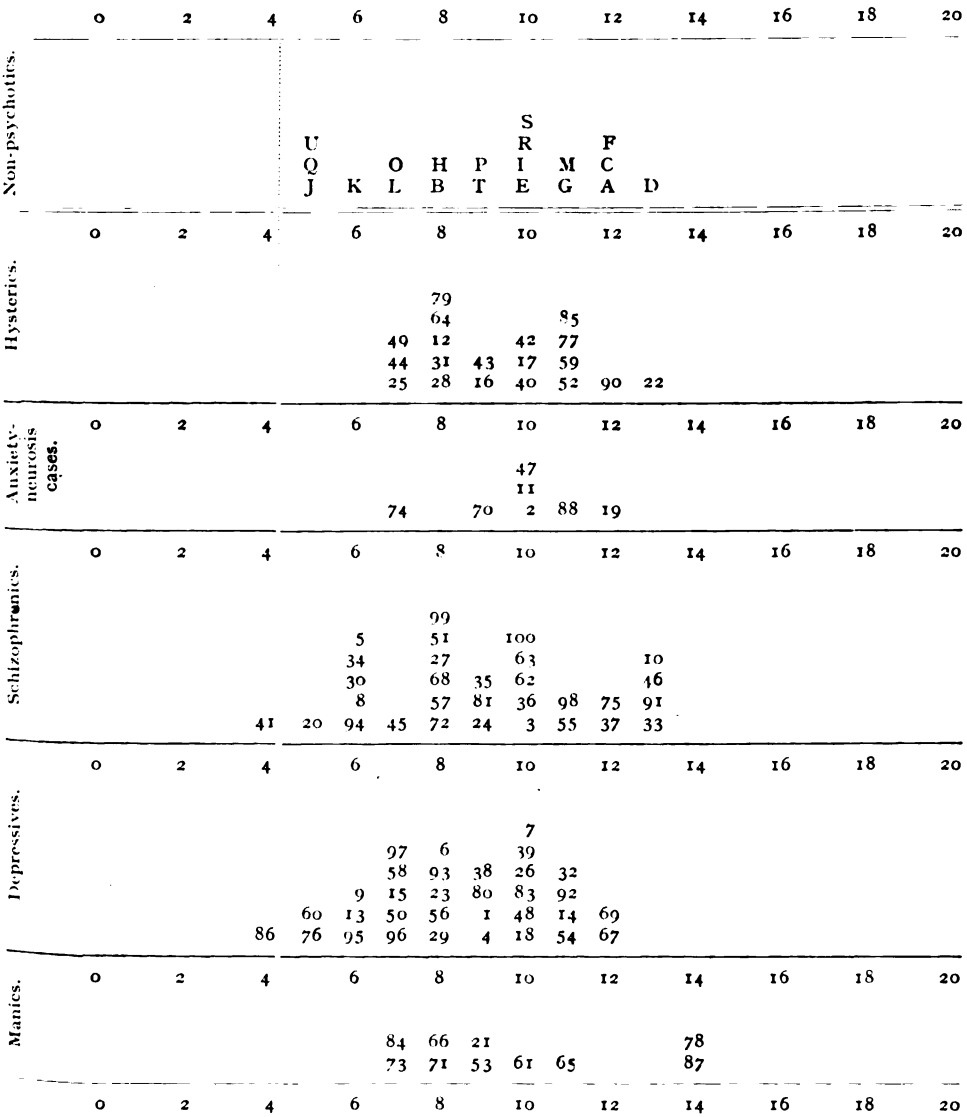
Chart VI.



Memory test scores (59 Maudsley, 26 Bethlem, 14 Horton patients and 20 non-psychotics).

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women. It is interesting to note that the three groups of non-psychotic subjects (professional women, domestic workers and mental defectives) overlap to a marked degree in respect of their scores in the memory tests. The scores of two mental defectives (non-psychotics R and S), for example, exceed the scores of two professional women (B and H) and six domestic workers (J, K, L, N, O and P). The memory scores of the non-psychotic group range from 5 to 13; 88% of the patients tested at Horton and 95% of those tested at Bethlem and Maudsley make scores which fall within this range.

Four patients, "delusionals" J (Horton, fairly bad paranoid) and W (Horton, congenital mental deficiency with dementia præcox features), "mania" 87 (Bethlem) and "mania" 78 (Maudsley), make scores which slightly exceed the highest scores of the non-psychotic group. Of the thirteen patients whose memory scores may be regarded as abnormally low, *i.e.*, less than 5, seven were senile, and two were cases of congenital mental deficiency with epilepsy. The remaining four showed undeteriorated and fairly good g-ability: "Delusional" E (Horton), whose diagnosis was changed to "psychasthenia", "delusional" I (Horton), a fairly bad case of non-systematized delusions, dementia præcox "G" (Horton) and schizophrenic 41 (Maudsley). It is clear that the poor performance of these patients cannot be ascribed to low g-ability, since "g" has been eliminated from the scores. In the case of the senile patients, the low scores may safely be ascribed to loss of retentivity for new impressions, while it is possible that the two epileptic imbeciles were congenitally weak in retentivity as well as in intelligence. With the remaining four, however, one is tempted to suspect interference by inhibition or distraction, with the conative element in recall. The tests do not, of course, discriminate between ability to *retain* impressions and ability to *recall* what has been retained.

Although only 13 of the 200 patients tested make "memory" scores lower than any score of the non-psychotic group, the question arises whether there may not be amongst the remainder evidence of some slight degree of impairment (other than g-deterioration), though not sufficiently serious to place the patient outside the range of non-psychotic performance in these tests. The average score of the non-psychotic group is 9. All categories of patients tested at Maudsley and Bethlem, and three of the categories tested at Horton ("delusional", "manic-depressive" and "manic" patients), make average scores of approximately 9. The remaining four categories of Horton patients make lower averages:

Dementia præcox patients	7·58
Melancholic patients	7·33
G.P.I. patients	7·3
Epileptic patients	6·5

The low scores of senile patients bring down the average in the dementia

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præcox and melancholia groups. There is no evidence that the performance of the non-senile patients in these groups is poorer on the average than that of the non-psychotics. In the case of patients suffering from G.P.I. and epilepsy, the lower averages appear to indicate some impairment or disablement (other than g-deterioration) affecting the ability to recall recent impressions as measured by these tests. The relatively low scores of the epileptics are to be accounted for in part by the verbal disability associated with epilepsy, to which we have referred in an earlier section in this paper (see p. 718).

It should be borne in mind that we are here considering *average* results only. There may, in any group, be individual patients whose capacities (apart from g-ability) for recalling recent impressions, as measured by these tests, are lower than before the onset of their illness. No technique, such as is now being developed for measuring g-deterioration, has been devised for locating and measuring decrement of other abilities.

The Value of "g" Measures for Psychiatry.

The value of intelligence testing in the diagnosis of mental defect and in investigating causes of maladjustment in "difficult" children is too well established for discussion in the present paper. Less widely known is the value of g-tests as an aid in deciding the type of psycho-therapeutic treatment from which a neurotic patient is most likely to benefit. When intelligence tests are used in conjunction with other types of tests, their sphere of usefulness is widened. Combined with tests of educational progress, they have led to discrimination between backwardness due to mental retardation and backwardness due to emotional and other factors. Recently, a further use of the combined application of intelligence tests and tests of educational achievement has been advocated by Shrubsall and Williams.* If the educational age of the person tested is higher than his mental age, that is, if the test results give evidence of his having, at some period, learned more than his present intelligence would enable him to learn, then deterioration of intelligence must have occurred and a diagnosis of dementia is indicated. The use of tests of intelligence in combination with tests of knowledge acquired earlier and still retained provides, then, as these authors point out, an aid to the differential diagnosis of mental deficiency and dementia. Attention has already been drawn to the closely similar procedure introduced by Babcock for measuring mental deterioration in paretic patients.

The present investigation has shown that g-deterioration can be located and measured in psychotic patients of very varied types. It is probable that in some types periodic testings would provide a quantitative indication

* Shrubsall and Williams, *Mental Deficiency Practice*, 1931.

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of the course of illness in terms of g-variation. It is further suggested that, if a g-test formed part of the examination of any patient considered for discharge, the test results would show whether the patient were able, as far as intellectual capacity goes, to adapt himself to the conditions awaiting him outside the hospital.

The Value of "g" Measures for Research.

(1) *Control of "g".*

Unless the subject's score in a g-test is known, it is impossible to evaluate his score in any other type of mental test. The subject's understanding of instructions and test material, the quality and speed of his performance, depend, in some measure, upon the amount of his g-ability. If what is required is a measure of some ability or trait other than "g", for example, the ability to recall recent impressions or the ability to turn from a well-habituated activity to one not habituated, but closely similar, as in p-tests, then it is necessary to know what part "g" has played in the performance, and to discount the effect of "g" from the test score. A method of controlling "g" by eliminating that part of a score contributed by "g" has been illustrated in our analysis of the "memory" scores obtained in the present investigation. Loss of ability in "memory" performances may prove to be partly or mainly due to loss of g-ability, and not to any appreciable degree to a weakening of retentivity or of the ability to recall as such.

Not only is it important to discount "g" from mental tests other than g-tests; it is equally important to discount "g" in any attempts to explain psychotic behaviour in every-day life. When "g" has deteriorated, the abnormal behaviour of the patient may, to some extent, be accounted for by his reduced g-ability, with consequent weakening of his capacity for intelligent adaptation to his environment. Further, there can be little doubt that reduction of g-ability makes it more difficult for the patient to deal with the inner world of past experience gathered before g-deterioration set in, and therefore too varied and complex to be elucidated and organized effectively now that g-ability is less than it was at the time of the original experience. As well might one expect an artist whose sight is failing to see clearly the canvasses that he painted when his sight was good. It is suggested that g-deterioration is both a symptom of psychotic illness and the antecedent of further symptoms; in other words, it is possible that irrationality of thought and behaviour and lack of response may, to some extent, be a direct consequence of reduction of g-ability, and only indirectly associated with the psychosis. In any investigation of the underlying causes of psychotic behaviour, it would be necessary to determine to what extent the abnormalities were a direct consequence of g-deterioration and not primarily associated with the psychosis.

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(2) *Physiological Explanation of "g".*

Reference has already been made to an investigation carried out by Hart and Spearman, at Long Grove, with the aim of testing a theory as to the physiological basis of the general and specific factors in cognition.

The physiological explanation of "g" put forward by Spearman is that "the brain (or a large portion of it) possesses some total quantitative characteristic, which works *as if* there were a constant output of energy distributed to different constituents of the brain in varying proportions". "The activity of any cortical region requires continual support from energy derived from the entire cortex, or possibly from a larger portion of the brain."

If this is so, any lesion, as Hart and Spearman point out, would reduce the total amount of available energy, and would involve "mental impairment extending to all intellectual performances whatever". Over and above this, there would be the specific disturbance of any performance directly dependent upon that part of the brain actually injured. The mental impairment "should be independent of the seat of the physiological lesion and of the nature of the malady . . . it should most affect just those performances which are shown in the case of normal persons to depend in the highest degree on the 'general' ability".* Tests requiring a considerable variety of mental activities were given to 68 patients. Hart and Spearman report their main conclusion in these words: "Our experimental results appear incompatible with the current view that dementia consists in large 'defects', 'gaps', 'hypofunctions', or 'ataxias' in mental powers, such as 'disturbed association', 'faulty judgment', 'weak power of conception', 'poverty of ideas', 'loss of memory', and so forth . . . In the main the mental injury appears to be of a perfectly diffuse character or to constitute a lowering of the whole intellectual level."

The present investigation corroborates the work of Hart and Spearman, in that the majority of certifiable psychotics tested showed deterioration of g-ability. There is, moreover, evidence that both the incidence and the amount of g-deterioration are associated with the degree of illness. Recent neurological research affords a significant parallel. Lashley's extirpation experiments† showed that after injuries to the brain, the rate of formation of complex habits (*e.g.*, maze-learning in rats) is "directly proportional to the extent of injury and independent of the position within any part of the cortex." It does not seem too optimistic to hope that psychiatric investigations into the conditions of stable, decreasing and increasing "g" may contribute, in the psychological sphere, to the physiological explanation of "g" and, in the neurological sphere, to more exact knowledge of the nature of cortical organization.

* Hart and Spearman, "Mental Tests of Dementia", *Journ. of Abnor. Psych.*, 1914.

† Lashley, "Basic Neural Mechanisms in Behaviour", *Psychological Review*, xxxvii, No. 1, January, 1930.

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SUMMARY.

1. Two hundred mental hospital patients of varied types were tested for—

(i) Present g-ability (by means of visual-perceptual g-tests).

(ii) g-Ability before the onset of illness (by means of a vocabulary test).

(iii) Memory for recent impressions of words, numbers and pictures.

2. The scores made in the vocabulary test show a normal distribution about an average which is the same as the average for non-psychotic adults. One may conclude, therefore, that before the onset of illness the mental hospital patients were a representative sample of the population in respect of "intelligence".

3. The combined use of "g" and vocabulary tests provides a means of locating and measuring g-deterioration.

4. There is evidence that both the incidence and the amount of g-deterioration are associated with the degree of illness. As many as 70% of the patients tested at Horton Mental Hospital showed g-deterioration, as compared with 38·4% at Bethlem Royal Hospital and 15% at the Maudsley Hospital.

5. There was no indication of g-deterioration—

(i) In cases about to be discharged as "recovered".

(ii) In the 21 cases of hysteria tested.

(iii) In the two cases of puerperal insanity tested.

(iv) In dementia præcox cases with a p-score not less than 1 and not greater than 4.

6. "Memory" scores with "g" eliminated show that in 91·5% of the patients tested, the ability to recall recent impressions (as measured by the "memory" tests) is within the normal range. In the case of patients suffering from G.P.I. and epilepsy, the lower averages indicate some impairment (other than g-deterioration) affecting their performance in these tests.

7. It is suggested that "g" measures are of use in psychiatry—

(i) To indicate the amount of general ability ("intelligence") present at the time of testing.

(ii) To eliminate "g" from the scores of other types of mental tests.

(iii) To discount "g" in evaluating the general behaviour of the patient.

8. It is suggested that measures of g-deterioration isolate one factor in the patient's inability to deal effectively either with the external world or with the internal world of his own past experience.

9. In conjunction with psychiatric and neurological findings, measures of g-deterioration may throw light upon the conditions of g-variation, and in this way contribute to the physiological explanation of "g", and to a clearer understanding of the nature of cortical organization.

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STUDIES IN PERSEVERATION.

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INTRODUCTION.

THIS study was undertaken in the furtherance of a project outlined in an earlier paper (1), namely, the development of objective means of estimating the progress of psycho-biological reactions. Perseveration has been touched upon in an earlier investigation, and it was determined to examine more closely what seemed to offer the possibility of a valuable mode of measurement.

The meaning usually attached to the term " perseveration " has undergone a certain amount of variation with the progress of work on this topic. What is now generally indicated by the term is the tendency for an activity to persist after the subject has decided to change that activity, this persistence in the primary activity being shown by a transitory interference with the new activity which follows it. Whether the tendency for an activity to recur after the second activity is well established is due to the same mechanism or not was not touched upon in this paper. Spearman (2) has formulated what he calls " this law of inertia and lag " as follows: " Cognitive processes always begin and cease more gradually than their (apparent) causes ". The most usually advanced theory as to the mechanism of perseveration is that it is due to inertia. Those who hold this point of view postulate a concept of mental energy, varying in amount, the inertia of which is represented by perseveration. Comment, however, has been aroused by the apparent similarity between perseveration and the phenomena of inhibition as observed by Pavlov. There are also interesting apparent similarities between perseveration, usually indicated by the letter " p ", the retardation of depression, the perseveration of epilepsy, and possibly blocking. Comparatively little experimental work has been done upon this, but investigations into the behaviour of " p " in the various reaction types have been claimed to show that there are specific changes in " p " which can be correlated with definite reaction types. Roughly, depressive reactions, schizophrenic reactions and epilepsy have been shown to give higher " p " readings than normals, manics giving lower " p " readings (Ewen (3), Stephenson (4)).

Further, a certain amount of work has been done in correlating the

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presence of varying degrees of perseveration with various character types, the predominant impressions having been that those individuals who showed a high " p " value, *i.e.*, a high degree of perseveration, also showed steadfastness of character, or that high " p " values were in association with introversion and low " p " values with extroversion in the sense of Jung. This, however, rests on rather doubtful grounds. Recent work has tended to show that this is not the case, without, however, revealing any clear-cut correlations with other described personality types (Pinard (5)).

Our first intention was to extend the work which had been done in the attempt to find definite changes in the behaviour of " p " in the various reaction types. In particular, we were anxious to observe the changes which " p " might manifest as a reaction progressed. After a considerable number of estimations had been made (260 in all) it became apparent that there were numerous errors inherent in the tests used. Accordingly, it was decided to examine the tests and the suitability of the calculations whereby " p " was obtained from them, our purpose being to evolve, if possible, some reliable tests which would permit us to carry out our original intention. To this end an unpicked group of ten normals and forty patients were taken, among which we included cases of depression and excitement, schizophrenics, epileptics and psychopaths. The reasons for deserting the orthodox method of selecting a group of normals, or a group of individuals showing the same type of reaction, become clear if it is kept in mind that the purpose of the investigation is not to examine " p " primarily, *e.g.*, not to examine its duration, intensity, etc., in normals and the various types of abnormals, but to investigate the errors lying in the most generally employed " p " tests, namely, the X-Y tests, and in the calculations used in estimating " p " from them. It is for the purpose of formulating similar tests both for normals and abnormals that a heterogeneous instead of a homogeneous group was chosen. It is necessary to bear in mind that this method carries with it certain limitations. We shall not, for instance, be able to say that the duration of " p " in normals or in certain psychotic groups is such and such. On this point we shall have to limit our calculations to a statement to the effect that, in estimating " p " in normals or in those psychotic groups, it is necessary to utilize tests and methods of calculation which will be adapted for " p " showing such and such a duration or intensity.

Procedure.

The X-Y form of test was used throughout. Briefly, this consists in carrying out a certain form of activity, X, for a definite period. This is followed by a different but closely similar form Y, and this in turn is followed by a further period of X activity denoted X′. The test might be better known as the X-Y-X′ test. Owing, among other factors, to the interference exerted by

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the Y activity, the production during the earlier part of X′ is less than during the earlier part of X, the amount by which it is less being one of the usually accepted measures of " p ".

Some of the sources of error in many of the current tests are obvious, and in order to clarify the procedure they may be mentioned at this point:

(1) Complicated types of activity, such as the writing of the letters of the alphabet, should not be used, since the subject, who is quite conscious that he is losing time in passing from one activity to the other, may, for example, write the letters in the X′ part of the test much smaller than in the X part, and if the number of letters is taken as the index of production, this tends to conceal the fact that his X′ productivity is relatively low.

(2) No interval should be allowed to elapse between the various parts of the test. During the earlier steps of the investigation we found that in a number of cases we were not able to show any perseveration at all if an interval was allowed to elapse. As it was rather self-evident that this would be the case and that, moreover, even if the length of the interval were fixed, it would not necessarily mean that this variable had been brought under control, as it is conceivable that " p " disappears more rapidly in some subjects than in others, we decided to eliminate the interval altogether.

Material.

The form of X-Y test mainly used by us was the " strokes " test. The subject made short strokes on squared paper upwards and towards his right, then, on the word " change ", immediately started making them downwards and to the right, and finally, on the second command to change, reverted to the first form of activity. For the heterogeneous group of 50 cases, X lasted two minutes, Y one minute and X′ one minute. The output was recorded every five seconds.

The test was repeated on each of the 50 subjects in the heterogeneous group, mentioned earlier, every six minutes for an hour, giving 500 estimations in all. The original purpose of this repetition was to examine the stability of the test, but as the work progressed interest was attracted in addition to the influence of fatigue and other changes. Further, a group of five tests was carried out on approximately the same group of 50 subjects in order to estimate the degree of correlation which the " strokes " test had with other X-Y tests in current use. These tests were also given at six-minute intervals, and in an order which was altered after every tenth subject in order to balance the effects of fatigue in each test. The time allowances for X, Y and X′ were the same as before. The five tests were:

(1) The " strokes " test.

(2) The " numbers " test, where X consisted in giving the even numbers from 50–100 repeatedly and Y the odd numbers from 51–99.

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(3) The "colours" test, where X consisted in counting the green beads, and Y the blue, on a string of coloured beads arranged so that green and blue beads occurred with a definite frequency, alternating with other colours.

(4) The "cancellation" test. Here X consisted in scoring out the "e's" and Y in scoring out the "i's" on a sheet of paper containing letters so arranged that the "e's" and "i's" occurred in a definite frequency alternating with other letters.

(5) The "writing" test, where X consisted in the writing of the sentence "It is this", and X′ in writing the same sentence without dotting the "i's" or stroking the "t's". This test is very faulty, since after the first few seconds the output of X′ is naturally greater than that of X.

Finally, in drawing our conclusions, material was from time to time taken from the 260 earlier tests, which were mainly of the "strokes" variety. Some subsequent tests were also made to furnish material for special points, making the number of tests upon which the investigation was based about 1,100 in all.

Findings.

Most important of our findings was that the value which is usually taken as the basis for calculating "p" in the X-Y test, namely, the difference in the output of the first X and the first part of X′, is not a simple value, but one which arises from several factors. These factors will now be discussed in detail.

Initial spurt.—Inspection of Chart I will show that production during the first three five-second periods in the X curve is very much greater than during the remaining periods. This phase of increased production is known as "initial spurt", and is present as a general rule at the commencement of any task, provided, of course, that it is familiar. Flügel (6) states that in a period of twenty minutes' work, 48·2% of the total fall in production occurred during the first minute.

It is at once clear that this factor will tend to throw the "p" value out if the X production taken for comparison includes this period of initial spurt, more especially as the amount of initial spurt varies from individual to individual, there being in a series of 500 estimations a variation of from 11·4 to 27·8. The values just used and known as the initial spurt indices were obtained by dividing the sum of the first two five-second readings of X by the sum of the last twelve, where X lasted two minutes, and multiplying by 100.

Early in the investigation the question arose whether initial spurt also occurred in X′, whether the fact that there was a change in the form of activity would be sufficient to provoke the same initial spurt which the commencement of a new activity does. In certain cases where initial spurt was high, "p"

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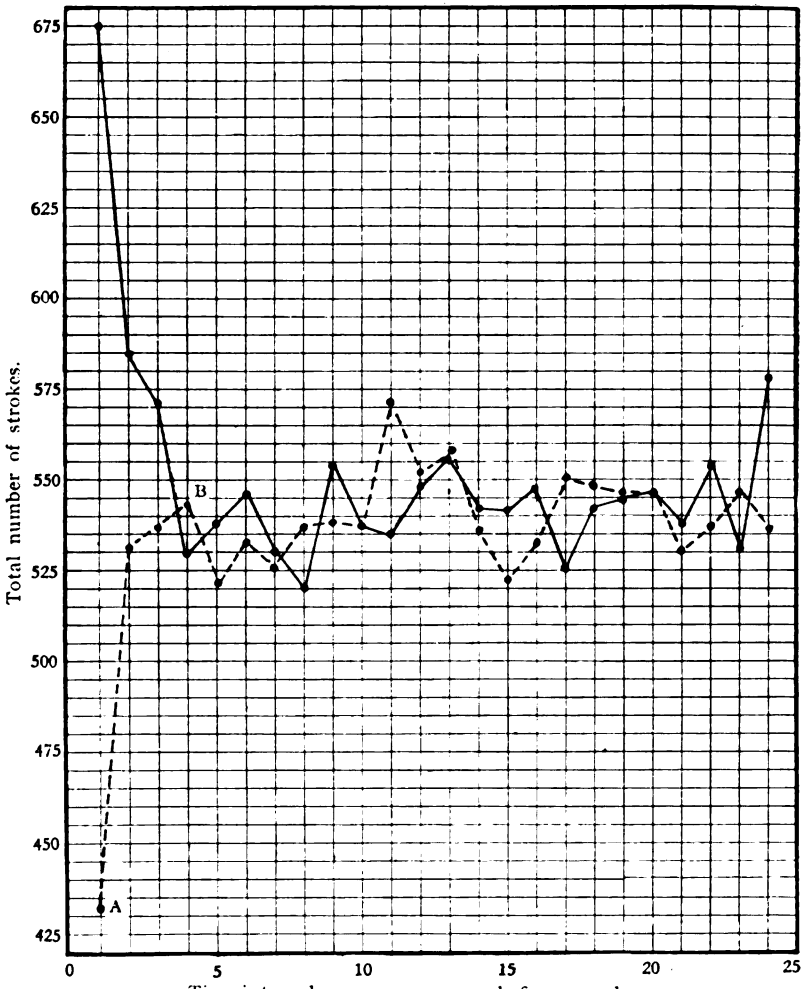
was noted to be low, which would be the case if initial spurt actually occurred in X'. The method of calculating " p " was to take the average of the first two five-second periods of X', and express them as a percentage increase

CHART I.—*Sum of Seventy-Nine "p" Tests.*



Time intervals: one square equals five seconds.
X—continuous line.
X'—broken line.

or decrease upon the average last twelve five-second readings of X. In order to verify this observation, the coefficient of variation between initial spurt and " p " was worked out for the first " strokes " test in each of the 50 subjects.

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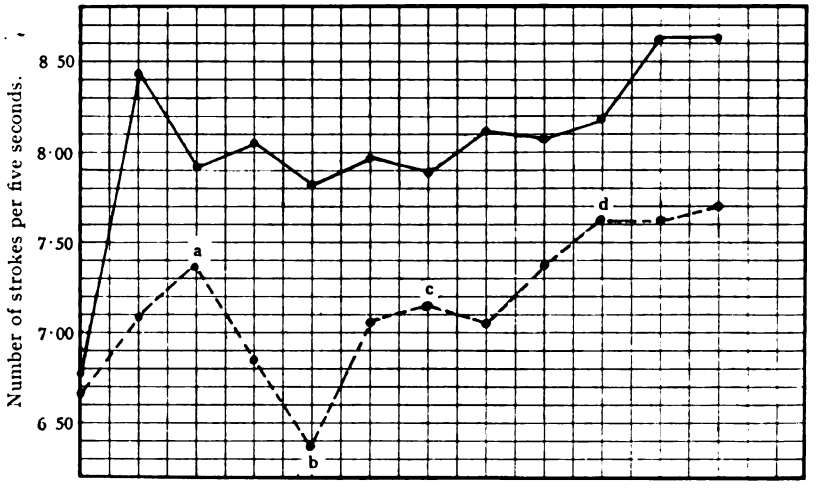
The coefficient was found to be plus ·394. The probable error was, however, ·08, that is to say, the correlation was not a significant one, and therefore there is no proof that initial spurt occurred in X′. It was noted, further, that initial spurt did not vary substantially throughout the ten tests which each of the 50 subjects performed, although, as noted above, it varied considerably from individual to individual.

Rebound.—On further inspection of X′ in Chart I it will be noted that there are rather marked excursions even after the preliminary severe dip

CHART II.



Average of 46 X′ curves where "p" is more than "o" but less than 20, compared with average of 21 X′ curves where "p" is 20 or more.
Time interval: one square equals five seconds.

has been recovered from, and that the line does not show in its first part nearly the same steadiness of output which it does in the last half minute. In certain individual records, too, it was noted that where the preliminary output was marked, there tended to be what we called a rebound. This rebound phenomenon seemed to bear a fairly definite ratio to the degree of preliminary dip. Examined in the aggregate, this tendency is, of course, obscured, but in order to clarify it further, the average of 21 tests was taken where "p" was 20 or more, and compared with the curve given by the average of 46 tests where "p" was under 20. This is shown in Chart II, where it can be very clearly seen that the rebound is much more marked where "p" is high than where it is low. Moreover, it can be seen that a certain number of subsidiary rebound crests and dips can be noted, as at a, b, c, d. Since this rebound

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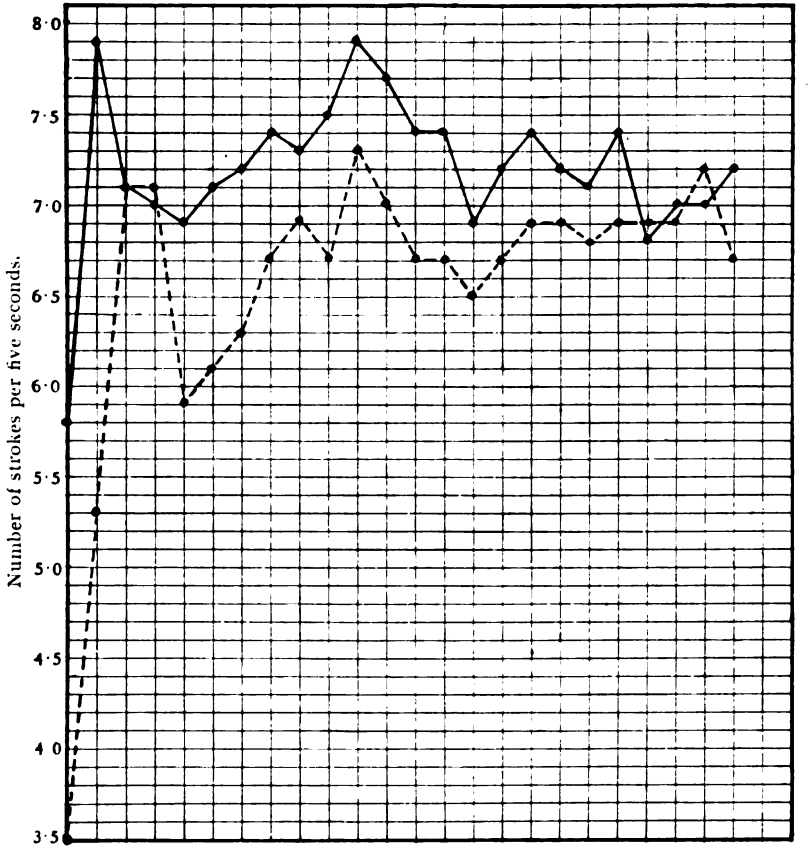
tendency seemed to be continuing, an average of 15 tests in which X′ was continued for two minutes, and " p " was 20 or more, was compared with the average of 31 curves of similar duration, but where " p " was more than 0, but under 20. The results can be seen in Chart III, and it will be noted that

CHART III.



Average of 15 curves of X′ where " p " is 20 or more, compared with average of 31 curves of X′ where " p " is more than " o " but less than 20.
Time interval: one square equals five seconds.

the tendency to rebound does not die out until the last twenty seconds or so. It is also noteworthy that where " p " is marked in intensity, as shown by the degree of preliminary dip, it is also of longer duration. That this apparent longer duration is not due to a lower rate of production can be seen by the fact that the two curves tend ultimately to run at the same levels.

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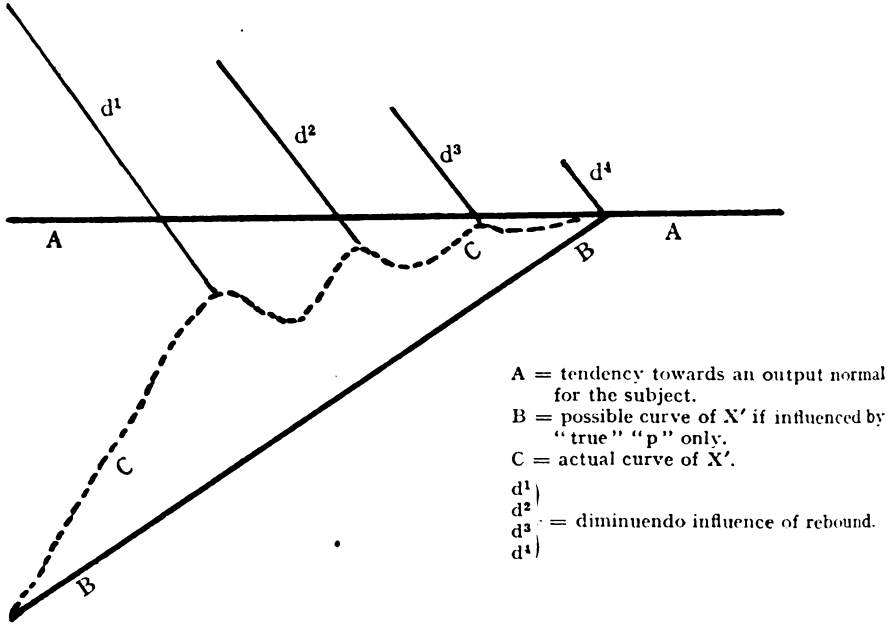
From these observations of this interesting rebound phenomenon, it seemed logical to inquire whether other marked changes in production might not be followed by similar rebound curves. Accordingly the initial spurt curve was again investigated. The average initial spurt index for our series was found to be 19. Accordingly 60 X curves in which the initial spurt index was 19 or more were combined, and the average was compared with the average of 68 curves having an index of less than 19. The results were largely

CHART IV.



negative, in so far that there does not seem to be more rebound associated with the high initial spurt curve. It is to be noted, however, that the output of the high initial spurt curve is definitely lower when initial spurt has disappeared than is the case in the low initial spurt curve. From this observation it was conjectured that possibly the combination of a large number of curves having a varied output would tend to mask any rebound curve. Accordingly, a further set of curves was collected in which only those high initial spurt index curves showing an output in the last twelve readings above the average were combined. They were compared with a low initial spurt index curve having a lower output than normal in the last twelve readings. Rebound was now found to be present, and in the high initial spurt index curve

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it was found to be absolutely, but not relatively more marked. We do not feel that these results in connection with the rebound and initial spurt are more than suggestive.

No adequate calculation was worked out to measure the degree of rebound. An attempt to eliminate its effects as far as possible in the estimation of " p " was made, in so far that only the first two five-second readings of X′ were employed in this calculation.

" p ".—From the foregoing remarks it will be gathered that it is very difficult to draw any definite conclusions as to what might be called " true ' p ' ", *i.e.*, the " p " curve freed from the influence of initial spurt and rebound. A very schematic outline of what we consider to be the main factors concerned in the production of the curve shown by X′ in the earlier readings is seen in Chart

CHART V.—*Correlations Between Five Tests of Perseveration.*

	1.	2.	3.	4.	5.
1. Strokes .	..	+·133	+·216	−·009	+·134
2. Colours .	+·133	..	+·105	+·286	+·025
3. Writing .	+·216	+·105	..	−·006	−·098
4. Cancellation	−·009	·286	−·006	..	+·279
5. Numbers .	+·134	+·025	−·098	+·279	..

Average probable error, ·094.

IV. From examination of Chart I it will be seen that " p " lasts in this group for a period of at least 10 to 15 seconds, basing this on subsequent production. Where " p " is marked in intensity, its duration is apparently also prolonged, as can be seen in Chart III, where " p " lasts at least 100 seconds. It seems likely that in individual cases " p " may very well last longer than this.

Reference was made earlier to a second series of 50 cases in which five tests were applied, one of them being the " strokes " test. The object here was to examine the degree of correlation which this latter test showed with other accepted " p " tests. The table of correlations is shown in Chart V. From this it will be seen that the correlations between not only the " strokes " and the other four tests are poor, but even among the other tests the correlations are practically non-existent. At first sight this would seem seriously to undermine the validity of the whole investigation, for if our tests do not measure the same phenomenon, then they are of little value. Inspection of Chart VI will, however, give the key to the situation. This chart shows the aggregate of the scores made by the 50 subjects in each of the ten " strokes " tests, which, as will be recalled, were made every six minutes for an hour. It will

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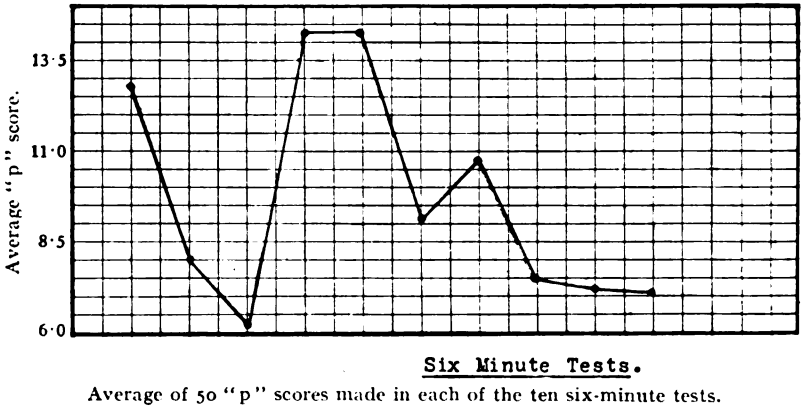
be seen that no two consecutive " p " readings are the same, and when it is recalled that each of these readings is based on the average production of 50 subjects, it will readily be understood that in individual records the scattering may well be greater.

This observation answers the rather serious question just raised. The low correlations obtained do not indicate that the tests are not measuring the same phenomenon, but are to be explained by the fact that what they are measuring is constantly changing in amount.

What the causes of this fluctuation in the amount of "p" may be are as yet unknown. Among other things, the effect of fatigue yet remains to be worked out.

CHART VI.



Average of 50 "p" scores made in each of the ten six-minute tests.

Finally, the relation of " p " to the speed of production was investigated. The average production for each of the 50 subjects during the first of their ten tests was obtained by taking the average production of the last twelve readings of X during that test, and the correlational coefficient between this production index and the corresponding " p " index was worked out. It was found to be − ·185. The probable error was ·092. From this it will be seen that there was no significant correlation. It is to be noted, however, that the varying speeds of production were the natural speeds, and it cannot be calculated from these findings that " p " might not show come correlation were the speed of production voluntarily altered by the individual.

CONCLUSIONS.

1. A study was undertaken to investigate primarily the suitability of X-Y tests for measuring perseveration in a heterogeneous group of normals and abnormals.

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2. Where these tests were employed it was found that unless special precautions were taken the calculations tended to be confused by the occurrence of initial spurt and rebound.

3. For this mixed group, initial spurt was found to have no correlation with " p ", nor did it occur in X'.

4. Rebound showed tendency a to be positively correlated with the degree of " p ", and possibly also occurred in X as a sequel of initial spurt.

5. Perseveration showed no correlation with the natural speeds of production of this group.

6. Where " p " was marked in intensity, it was also marked in duration.

7. " p " was found to be markedly fluctuating.

8. We feel that it would be premature to standardize the X-Y tests for perseveration until further work has been done on them.

9. We would suggest that some of the more fundamental errors in estimating " p " are eliminated by X-Y tests of the construction used here and by the methods of calculation employed.

10. It would seem of little value to attempt to estimate " p " by the cross-section method in a single test. The series method of testing offers a lead towards more reliable results.

11. We would emphasize again that the above statements are in regard to phenomena for which X-Y tests must be adapted if they are to be used on heterogeneous material. They are not findings as to the behaviour of " p " in normals or in the various psychotic groups.

The authors are desirous of acknowledging their indebtedness to Dr. T. A. Pincock, Superintendent of Brandon Hospital, for his permission to utilize the clinical resources of the hospital in the preparation of this paper.

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OCCUPATIONAL THERAPY FROM THE THERAPIST'S STANDPOINT.*

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THE use of occupational therapy in mental or physical illness, as an adjunct to medical treatment, has developed rapidly during the past twelve years. As definitions often prove a snare to the uninitiated, and as no comprehensive phrase has been coined for this scientifically applied activity, it seems advisable to give a short survey—based largely on experience gained in the United States—of the manner and degree in which this therapy is contributing to the recovery of the sick to-day.

In the general hospital, occupational therapy has come to take a very real place as an important department of medical practice, with a wide field of usefulness. Once it has been accepted by the hospital staff that the article made by the patient is the by-product, the cured patient the end-product of treatment, and that the patient might as reasonably be paid for taking a dose of medicine as for completing a craft article, then it is worth while prescribing occupational therapy for ten of the fifteen days' average residence of a patient in a general hospital.

If occupational therapy is to be incorporated as a curative scheme in the work of a hospital, the occupational therapy department must prove its value. The department will be accorded " that respect and deference in the organization of the hospital that it earns by its work, by its actions, and its co-operation in the general scheme of things ". At the same time the most skilful and carefully trained occupational instructor will be seriously handicapped in his or her efforts, if not properly supported by the medical and nursing staffs. There must be team work and real understanding of the value and methods of occupational therapy by every member of the team, doctors, nurses, medical students, administrators and the public.

The preceding statements may be illustrated by considering how occupational therapy can be employed in a chronic disorder such as pulmonary tuberculosis. It might be assumed perhaps that a person of artistic ability who for some years had herself undergone treatment for tuberculosis would prove a competent occupational therapist. However, without experience in

* This paper is based upon a lecture delivered at the Institute of Medical Psychology, London.

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the proper use of materials as the means for freeing creative impulse, the untrained therapist may easily mishandle an interest that has been over-stimulated, and may thus nullify any possible advantages, immediate or future, that might accrue to the patient. A trained worker will get an insight into the medical and social history of each patient. She will appreciate the psychological approach necessitated by the rapid changes of mood of a tuberculous patient who believes he is exempt from precautions applicable to his fellow patients, yet who, at the same time, fears he will never recover, and equally fears to make the attempt to do so. Above all she will realize that with any patient, whatever the disease, the therapist must treat the whole personality. It is in the sharing of common interests that the therapist will gain an insight into the emotional and mental life of the patient as a personality. By the exercise of this human understanding the therapist will then be able to provide some therapeutically selected occupation in which the patient can find an outlet for energy hitherto pent up in emotional conflicts.

In illnesses or other disabilities with long convalescent periods, the work provided for purely therapeutic purposes may often serve also for pre-industrial and pre-vocational training. This side of the work, leading into the domain of the sheltered workshops, cannot be dealt with in this paper. It is sufficient to state that " the deciding factor of success or failure in rehabilitation is not the physical handicap, but the emotional and mental attitude or reaction to the physical disability ".

It is also impossible to give any account of the research work which has been done along the lines of analysis of crafts for work with chronic patients, and the manner in which one patient can gain physical and psychological benefit from a craft used, or game played, in one manner, while another patient may gain equal benefit from the same craft or game applied in another manner. Neither is it possible to deal with the technicalities of measuring joint motion and muscle strength and of the application of treatment, including the alteration of tools and materials to meet the required deformities and disabilities of individual patients, who may be suffering from chronic diseases, such as asthma, cardiac trouble, chorea, empyema, hyperthyroidism, hypothyroidism and from bone diseases, joint diseases, bone injuries, various types of paralysis, muscle diseases, and post-operative conditions.

In the case of children suffering from chronic diseases, occupational therapy attempts to create a normal atmosphere by the use of natural tendencies of childhood in play, life and companionship. In all chronic cases it provides a " means of conserving and bringing into play whatever remains to the sick and injured of capacity for healthy functioning ". This is not only achieved by scientifically applied arts, crafts, and games, but by the inclusion of the patient in clubs, societies and groups, so that any of his creative impulses may find satisfaction in social life.

Occupational therapy for the mentally ill is an extremely big problem, and

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there is liable to be confusion between what is being done, and what can be done, at the present day. The first attempt at assisting the patient to a social readjustment was by employment in routine work about the hospital and grounds. Organized occupational therapy, however, has proved able to deal successfully with an increasingly greater number of patients than was possible under the uninspiring conditions of hospital routine, and a brief sketch will show how an occupation department can be integrated into the life of a mental hospital. It must be remembered, of course, that this paper is based on experience obtained in America.

First of all what may be called an occupational or industrial survey of the hospital is made. Suitable foremen for each particular occupation are selected from the staff, and each foreman must also show qualities fitting him to deal with the particular type of patient to be placed in his care. Much can be done to educate hospital employees in sympathetic co-operation by classes in psychiatry, occupational therapy, and the art of handling patients, etc., for, if it takes years to win the co-operation of and to readjust a patient, the education of an employee is also a lengthy business.

An analysis of all work available, from heaving coal to running the radio room, is drawn up, so that the jobs shall be apportioned suitably to the needs and capacities of the particular patient. In a hospital where such an analysis was made by the occupational therapy department, it was found that while some foremen had worked out systems which were therapeutically excellent for the individual patient, the attendant in actual charge of the group of patients mopping a floor, for instance, might nevertheless behave like an indifferent galley master, entirely heedless of the need for individual attention to any patient.

For some types of psychoses requiring daily sedative routine work, mopping the floor may be excellent, but for the schizophrenic who stands aimlessly about, or trails a soaking mop indifferently over both clean and uncleaned floor, it is a futile gesture either for himself or for the group. As everything in a patient's environment reacts on him consciously or unconsciously, and as every piece of work given a patient, whatever his mental or emotional level, presents a problem to him, then, if the solution of that problem is to be followed by a sense of satisfaction for the person chiefly concerned, the above illustration has shown that not only must the foreman and the work be known, but also the attendant and the patient.

In every case an index card is filled out from the medical record, from the social service report, and from details obtained from the physician and from the patient, showing not only the patient's capacities, but his ambitions, hobbies, etc. Thus the therapist discovers, under guidance from the physician, the work and social activities appropriate for the patient. Finally the patient is introduced to his foreman, to his work and to his fellow-workers, and from time to time his reactions are observed and noted on the index cards.

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The attempts to re-educate groups of deteriorated psychotics in habits of cleanliness and in routine activities have met with considerable success, and it can be seen that the daily menial tasks of industrial work, therapeutically applied, may have excellent results. Of course as the condition of the patient changes, the work or occupation should be changed appropriately.

Apart from the social activities, group therapy on a large scale is probably not beneficial for the greater number of the mentally ill, that is for those suffering from the functional psychoses—schizophrenia, manic-depressive psychosis, involutional melancholia, psychopathic personality and the psychoneuroses.

All these disorders show a conflict in the emotional life, causing the personality to turn away from reality and from any social activities. Thus occupational therapy, which can be of the greatest value in these conditions, must here be provided in a form that affords, at first at least, an *individual* outlet for the emotional life. It will be possible to lead up to group activities only later on. Occupational therapy presents a most valuable method of substituting objective reality for fantasy in so satisfying a form that the individual is weaned back to an active participation in well-balanced play and work. Dr. Mary MacTaggart has stated that " The basis of work is play; the child who plays actively, constructively and well, will later on work with the same keen concentration and eager enthusiasm as he devotes to play ". As the mentally ill cannot work either with keen concentration or eager enthusiasm, they must first of all be met on the play level. It is not suggested that this type of adult patient should be treated as a child. The therapist, while aware of the emotional inhibition from which such patients suffer, will realize that their intelligence need be in no way impaired and must never be under-estimated. Very often patients are called by their first name, which is usually equivalent to treating them as children. Especially with the schizophrenic type of patient this often unconsciously patronizing familiarity is unwise, as the smallest detail in the emotional relationship with the therapist may bring about the wrong attitude in a patient who unconsciously desires to turn from all responsibility.

Besides understanding the patient's history, type of mental disease, reaction to present environment and the inter-patient relationship, the therapist must attempt to estimate how far the patient has withdrawn from external contacts, so that suggestions may reach both the intellectual and emotional life of the patient. A schizophrenic-paranoid type of patient may show outwardly normal behaviour, and yet may be far more withdrawn from external stimuli than another patient, who is seemingly lost in fantasy, but who can be stimulated by music, colour and rhythm.

Before attempting to redirect the expression of socially unacceptable behaviour on the part of a patient, it is well for the therapist to inquire what is the source of the patient's need for this form of expression. A woman who

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has found the problems of life too difficult may pass into a state of hypomania, and seemingly enjoy the irresponsible life amongst some of the most disturbed patients. In this environment, obviously, she may express herself without criticism from others or from her own ego ideal. Such a patient may respond to the opportunity for self-expression in a group by means of free expression, mime, and classical dancing. In such group-therapy, all exercises and dances giving a rhythmic emotional expression, and explaining a fantasy suggested by the music, can be taken in a circle formation, so that the patient need not copy others, and will have no one against whom to feel antagonism or competition. Once the patient has found enjoyment in doing something well she can usually be encouraged to continue. As she gradually finds an outlet for her emotions, in and with a group, an alteration which Adler has termed the " Yes—but " reaction will take place in her attitude. At the same time the therapist will realize that although the patient has found satisfaction in co-operation, her real problem surrounding the " but " has not been, and cannot be solved, without the united understanding of the patient and the psychiatrist.

A real difficulty with schizophrenic and psychoneurotic patients is the breaking up of conventional thinking and activity. Complicated crafts requiring much tuition and exactness, as well as prepared designs for these crafts, may limit the creative desire, thus forcing the patient into accepting a standard of what is considered suitable for him, in place of freeing and adapting his own creative desires to his materials. His attempt to " be " is hindered by his fear of " being wrong ".

The schizophrenic who has gained some emotional freedom needs the stimulation of a sense of solidarity. This can be obtained through his relation to the working group, rather than to his own particular craft, which might become a means of further isolation. In a group product, such as the making of marionettes, or the scenery, properties and costumes for a play, the patient is drawn into contact with his neighbour by working for a mutual interest—the play. To be really interesting, group projects should fulfil an actual need, such as interior decoration, an order for soft furnishing for a ward, or toys for a children's hospital. The patient able to do only the simplest job, such as sandpapering, will gain a feeling of responsibility when he realizes that his neighbour does not care, and is not able, to paint on badly papered wood, so that the patient who sandpapers sees his work in relation to the whole.

It is impossible to generalize on the therapeutic application of colour or of materials for different crafts, because every individual case will have a different reaction.

Free expression in modelling, in colour and in line may be of great value, both for the freeing of an inferiority feeling in the patient by the establishment of self-confidence, and for the information of the therapist and the

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psychiatrist. The "hand follows the mind", and undirected expression will show how far the patient has related herself to reality. By a therapist who understands her patient and something of universal symbolism in colour and form, much can be learnt of the unconscious, emotional conflicts of the patient, because they are symbolized in clay, colour or line, and because, in the act of creating in a safe environment, the patient will often be relieved of sufficient anxiety to be able to talk freely. This treatment can follow with good effect a period of free expression in movement to music.

Although rhythm in dance was one of the first expressions of emotion in primitive man, it is seldom used as a therapeutic measure in treating mental patients. Most hospitals have weekly dances, in which a varying number participate. In any form of recreation or work therapy, much good can be gained by the co-operation of the sexes, and this is true in ballroom dancing, but the more proficient the couple, the more must the female completely subordinate herself to the male, or to the female taking the male lead. In some cases this is untherapeutic. The exercise is beneficial, but limited to certain muscle groups. Folk-dancing expresses few emotions and gives little free movement, and from the first demands a following of definite steps and instructions by the patient At the same time this form of dancing can be beneficial for the mentally deficient and for some deteriorated psychotic patients. In mime and classical dancing, in which the patient is encouraged to express all that is suggested to her by the music, the whole body can be exercised with a minimum of muscular fatigue, and the patient finds expression for all her moods and fantasies, and above all for her repressed emotions. Judging by a little experimental work on these lines with the apache type of post-encephalitic children, it is probable that much may be done by this treatment to deal with behaviour problems.

In the treatment of schizophrenics and psychoneurotics by this type of group therapy, the music stimulates the patient's emotional conflicts. Unconscious fantasies are dramatized in motion. The patient gains self-expression in three ways:

(1) By accepting a main idea which the music seems to suggest, and in a group, the patient gives an interpretation of this idea which has been accepted by the group. Individual conflicts will show in choice of parts, movements and reactions to the group.

(2) By giving an entirely personal interpretation to any phase of music; by endeavouring to bring the fantasy into the reality of speech, on the intellectual conscious plane, by describing the idea or feeling suggested by the music.

(3) By free choice of an emotion and of music to suggest a fantasy or feeling which the patient creates in reality by the use of the group as the material. The patient who, in the presence of others, has dramatized his unconscious fantasy many times in numerous ways by movement, can more

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readily bring enough courage to tackle the problem with the psychiatrist. He can pass on to play out aggressiveness, self-punishment, self-pity, etc., and he will gradually become more acquainted with his unconscious desires.

If mental symptoms are warped attempts at sublimation, then occupational therapy provides a means by which instinctual drives may find an outlet and readjustment. A certain amount of cruelty may be expelled by the patient in felling a tree, playing a game of " rugger ", working in a butcher's shop, or in conquering the representatives of authority in a game of chess. Enough indication has been given to show that occupational therapy aims to absorb emotional affect, whether in direct or in sublimated form.

It is the aim of the therapist not only to assist the patient to make a readjustment, but to attain a working method by which he may continue to adjust. During treatment the therapist must be aware of the fatigue factor in mental illness, engendered by the nervous energy used in compulsive thought and action, and the conflict of fantasy life with reality. She can introduce diversional activity, and she may be able to find and recommend to the physician the type of work that stimulates and brings enjoyment. The physician should not only direct, but see the patient at work, and if necessity arises explain to the therapist that such mechanisms as sullenness in behaviour may show a desire for love, that neatness may perhaps be an over-compensation for interest in excreta, and in this case the patient can be encouraged to model with clay, while a quiet retiring patient might play the drum in the symphony band. As Dr. Oberndorf has stated, " the goal of scientifically determined occupation is obtainable only through a very close co-operation between a discerning physician and an understanding therapist ".

There is a great need of research into scientific methods of approach to, and application of, occupational treatment. This work can only be attempted by a well-trained therapist, one who at least fulfils the minimum requirements of the American Occupational Therapy Association.

A competent occupational worker needs common sense, tact, imagination, and a sense of humour. An insight into his or her own personality problems is a great asset, as this will obviate any exploiting of unconscious conflicts in the work—a point of considerable importance, especially if the worker is to deal with the mentally ill. Much of the skill of an occupational therapist will, of course, only be obtained after the training period is over, in the actual practice of the profession itself. And here, as wherever it is a matter of deliberate intention to influence and direct the lives of others, it is well to keep the philosophic maxim of self-knowledge clearly before one, for only the free can liberate the bound.

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Occasional Notes.

THE REVISION OF THE CLASSIFICATION OF MENTAL DISORDERS.

IN the Journal for April, 1932, there was published the " Final Revision of the Classification of Mental Disorders ", drawn up after two and a half years' consideration and discussion by the Clinical Psychiatry Sub-Committee.

This classification, however, was not accepted by the Council of the Association, but was referred back for further consideration. This has resulted, after discussions extending over another year, in the scheme set out below, which was finally accepted by the Council at their meeting in May, 1933, and is now the official classification of the Royal Medico-Psychological Association.

The scheme consists of two parts, which are intended to be used in conjunction with each other. Part I contains the actual classification, and Part II the ætiological factors, or associated factors, as some may care to call them.

The revision of the ætiological factors has enabled the Sub-Committee to limit Part I as far as possible, to a purely clinical classification, *i.e.*, one presenting clinical pictures or types of mental disorder with which all psychiatrists are familiar. Except in a very few well-defined instances, referred to later, terms with an ætiological connotation have been excluded from Part I.

Further, an attempt has been made to make the classification sufficiently elastic to allow of future developments. For this reason the table consists of a limited number of broad headings, rather than an exhaustive inventory of syndromes and sub-groups. Where, however, a patient is found to be suffering from a particular syndrome which is not adequately described under a group heading, it is stipulated that this is to be specified.

For instance, a case of Korsakov's syndrome should be returned as " confusional state (Korsakov's syndrome) ", and if the condition is deemed to be due to alcohol, the complete classification, expressed in symbols for statistical purposes, would be F. (Korsakov's syndrome) 8 A a.

The headings under which such sub-types are likely to occur, or should be specified, have been indicated by an asterisk. Similarly, a number of the headings in Part II have been marked with an asterisk, and in these cases the precise ætiological factor is to be specified, when known. Thus a psychosis due to cerebral tumour should appear as I.10 (cerebral tumour) ; a case of

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depression following influenza and associated with a family history of manic-depressive psychosis would appear as E a ii . 8 B c & 1 a (manic-depressive).

Classification of Mental Disorders.

PART I.

To be used in conjunction with Part II. (*The Ætiological Factors.*)

A. Oligophrenia (amentia, mental deficiency).
- (*a*) Idiocy.
- (*b*) Imbecility.
- (*c*) Feeblemindedness (Moron).
- (*d*) Moral deficiency.

B. Neuroses and psychoneuroses.
- (*a*) Exhaustion states (including neurasthenia).
- (*b*) Anxiety states.
- (*c*) Compulsions, obsessions and phobias.
- (*d*) Hysteria.
- *(*e*) Mixed and other forms.

C. Schizophrenic psychoses.
- (*a*) Dementia præcox.
  - i. Simple.
  - ii. Hebephrenic.
  - iii. Katatonic.
  - iv. Paranoid.
- (*b*) Paraphrenia.
- *(*c*) Other forms.

D. Psychopathic constitution (including paranoia).

E. Affective psychoses.
- (*a*) Manic-depressive psychosis (cyclothymia).
  - i. Elation.
  - ii. Depression.
  - iii. Stupor.
- (*b*) Involutional melancholia.

*F. Confusional states.

G. Epileptic psychoses.

H. General paralysis.

*I. Other psychoses associated with organic brain disease.

*J. Dementia.

*K. Undetermined types.

* Specify type when possible, *e.g.*, Korsakov's syndrome.

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PART II.

1. Heredity.
   - *(a) Psychotic.
   - (b) Epileptic.
   - *(c) Neurotic.
   - (d) Alcoholic.
   - *(e) Various organic nervous diseases.
   - *(f) Endocrine disease.
   - (g) Tubercular.

2. Deprivation of special sense.
   - (a) Sight.
   - (b) Hearing.

3. Critical periods.
   - (a) Puberty.
   - (b) Adolescence.
   - (c) Climacteric.
   - (d) Senility.

4. Child-bearing.
   - (a) Pregnancy.
   - (b) Puerperium (not septic).
   - (c) Lactation.

5. Mental factors.
   - (a) Previous attacks of mental disorder.
   - *(b) Sudden stress.
   - *(c) Maladjustments of—
     - i. Social life.
     - ii. Sex life.

6. Physiological disturbances.
   - (a) Malnutrition.
   - (b) Privation.
   - *(c) Exhaustion.

7. Trauma.
   - *(a) Injuries.
   - *(b) Operations.
   - (c) Sun- or heat-stroke.
   - (d) Electric shock.

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8. Toxic factors.

A. Chemical.

(*a*) Alcohol.
*(*b*) Narcotic drugs.
*(*c*) Mineral poisons.
*(*d*) Other poisons.

B. Infective.

(*a*) Syphilis.
i. Congenital.
ii. Acquired.
(*b*) Puerperal fever.
(*c*) Influenza.
*(*d*) The specific fevers.
(*e*) Tuberculosis.
*(*f*) Focal sepsis.
*(*g*) Other infections.

*C. Metabolic.

*9. Deficiency diseases (pellagra, beri-beri, etc.).

*10. Diseases of the nervous system.

11. Diseases of other systems.

*(*a*) Hæmopoietic system.
*(*b*) Cardio-vascular system.
*(*c*) Respiratory system.
*(*d*) Gastro-intestinal system.
*(*e*) Genito-urinary system.
*(*f*) Endocrine system.

12. No factor ascertained.

13. No history obtained.

A few notes are added on the terms used and the changes that have been made in the 1932 revision.

The reasons for the adoption of the term "oligophrenia" were set out in the April, 1932, number of the Journal. It is hoped that members will encourage the use of the word, and that the inaccurate and ambiguous "amentia" will be dropped. "Amentia" is retained in brackets simply as a guide in the meantime.

Phobias have been separated from the anxiety states, on the grounds of a

* To be specified.

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fundamental difference between the vaguer, more indefinite and generalized fears of the latter and the definite attachment of fear to an object in the former.

Under Section C, " other forms " of schizophrenic psychoses have been recognized, in order to allow scope for changing views on the subject.

The term " confusional states " (Section F) has been reinstated. In so far as these (and other) psychoses are due to toxic factors they will be defined by reference to the appropriate heading in Part II.

Section G is an unsatisfactory group and will undoubtedly be subdivided as knowledge advances, but in the meantime it is retained to correspond to what is called " essential " epilepsy with psychosis. Obviously, however, an epileptic may remain sane, or may develop some other form of insanity such as manic-depressive psychosis.

Section H (general paralysis) is a recognized clinical group, although purists may not agree with the diagnosis as sometimes made. Here, again, our knowledge is not sufficiently advanced to permit of any alteration.

The ætiological or " associated " factors do not call for special comment.

At a later date it is the intention of the Sub-committee to publish a list of explanatory notes on the terms adopted in Part I, for the guidance of those using the scheme.

G. W. T. H. FLEMING,

Hon. Secretary,

Clinical Psychiatry Sub-Committee.

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OCCUPATION THERAPY AND "ACTIVE" THERAPY.

DURING the past year interest in occupation therapy has been greatly stimulated by the visits, organized by the Study-Tours Sub-Committee, to Gütersloh, where the system associated with the name of Dr. Simon and often spoken of as "active therapy" originated, and to Santpoort, where this system has been most thoroughly applied outside Germany. Following these comes the Board of Control's Memorandum,* reviewing the present position, and making definite recommendations for the initiation and development of occupation therapy on similar lines.

Until recently the work done in this direction in Germany and Holland had received very little attention in this country, and even now it cannot be said that its immense significance has universally been realized. Organized therapeutic occupation, as distinct from the time-honoured employment of patients, derived mainly from the experience of the war hospitals, and from the conspicuous example of American mental hospitals. In the Board of Control's Annual Report for 1931, for instance, the standard to be aimed at is given as that of "the best American hospitals", and the question is raised whether this can be attained without the lavish staffing in vogue there. American methods are also the only ones described in the most recent edition of Henderson and Gillespie's text-book, while other current works make only cursory reference to the subject. In the Board's report for 1932, on the other hand, emphasis is laid on the "lessons of Gütersloh and Santpoort", and the Board heartily endorse the principles that guide the work at these centres.

What, then, is the Simon system, and wherein does it differ from the methods elaborated in America, and practised, though often in embryonic form, in this country? The Chairman of the Board of Control, speaking at the discussion on the subject at the Public Health Congress last year, stated that in the American method the part played by the occupation therapist was elaborated and emphasized, while in the Dutch and German practice, putting it quite generally, the work of the occupation therapist was done by the medical staff themselves. But the difference is more far-reaching and fundamental.

Occupation therapy, as we have known it, is a therapeutic measure applied to a certain number of individual patients, though these may be combined in groups for training purposes. Its value is not to be denied, but it leaves untouched the general character of the hospital. The fully-developed Simon

* Board of Control: *Memorandum on Occupational Therapy for Mental Patients*, 1933. Price 6d.

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system, on the other hand, involves a transformation of the hospital régime which can only be compared with that brought about by the great reforms of the early nineteenth century. Here the entire institution becomes one vast occupational centre ; and the therapeutic application of work, rest and recreation becomes the foremost concern of the entire staff working in co-operation. This is made possible because the system involves much more than occupation alone. The educational approach to the patient, shown in the simple measures of conditioning described below, is an integral part of it. The most remarkable result has been the complete elimination of the refractory or turbulent ward, and the virtual elimination of the refractory or turbulent patient.

That the change is truly revolutionary is emphasized by the experience of Dr. Van der Scheer (now Professor of Psychiatry at Groningen University), who introduced the system at Santpoort in 1926. At that time the hospital already had about 70% of its patients occupied, and it might be thought that subsequent extension to over 90% might have made comparatively little difference. The contrary was the case, the change being felt by all as a new departure, and marking a turning-point in the history of the hospital.

A description of Gütersloh was included in Dr. A. E. Evans's account of the Tour of Mental Hospitals of Western Germany in the Journal for January, 1933 ; and a description of Santpoort, together with notes on the Simon system, will be found in the account, also by Dr. Evans, of the tour of Dutch Mental Hospitals in the January, 1929, number ; the latter, though nearly five years old, can still be taken as accurate in the main, though some further progress has been made since its publication. No first-hand account, however, of the principles underlying the system has yet appeared in this country. We reproduce here, therefore, a short paper on the subject, which was originally prepared by Dr. Van der Scheer for the Congress of French-speaking Alienists at Antwerp in 1928* :

" A few years ago, in a paper read at a previous congress, I stated that of the 1,460 patients in my institution, about 70% were able to carry out more or less productive work. At that time the remaining 30% were idle, and of these about one-third, *i.e.*, 10% of the total number, were incapable of work for physical reasons, such as serious illness or old age.

" The remaining 20% belonged to the so-called ' restless ' group, which includes the violent and destructive patients ; those, for instance, who tear their clothes or soil their room, in fact the usual population of the so-called ' restless ' or ' turbulent ' wards.

" The purpose of the present paper is to show that by taking these patients in hand systematically, while at the same time providing them with pleasant and quiet surroundings, it is possible, in the great majority of cases, to cause them to become relatively quiet and sociable. From my experience I can say that a treatment on new lines of this class of patient is gradually taking shape.

* *Congrès des Médicins Aliénistes et Neurologistes : XXXII Sedition. Comptes Rendus.* Paris : 1928.

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which will bring about, in a comparatively short time, the complete disappearance of the turbulent habits of a large section of mental hospital patients.

"To give you an idea of the results that can be obtained, I have taken a census of my patients on July 1, 1928, the date being chosen at random. On that date, out of 1,420 patients, 1,273 were at work; of the 147 unemployed, 112 were incapacitated through serious illness or old age, so that only 35, or 2½%, were unemployed for mental reasons. Of these only 8 were still continuously isolated in single rooms, and hardly any sedative medicines were in use.

"Treatment by the wet pack has been completely given up, and the continuous bathing equipment, comprising 51 baths, is almost never used.

"The fundamental principle of the treatment advocated here consists in a methodical application of the data obtained from pedagogic experience and from a study of normal development in man.

"Applying these educational principles to mental patients one finds:

"1. That most of the symptoms of turbulence, such as noise, abusiveness, destructiveness, and uncleanliness, are not part of the true symptomatology of the psychosis. They are nothing but bad habits, due to loss of the acquirements of education and experience.

"2. That the influence on the patients of their environment is of the greatest importance, and that in our treatment we must consider the reciprocal influences that obtain between the individual and the environment as a factor of paramount importance.

"Even if the illness has caused irreparable organic damage, the patient nearly always retains sufficient mental potentialities to enable him to be re-educated in a particular direction. In biological terms, the problem is to initiate in the patient a number of new conditioned reflexes.

"In no case should a patient who appears incapable of spontaneous occupation be left to himself. With systematic perseverance one finds that nearly all are able to carry out some form of activity.

"Work or occupation (including recreations such as reading, games, dancing, etc.) is our most powerful means of re-education.

"We begin from the results obtained from experience in the education of the normal child. A mental patient is able to learn from experience in the same way as a child learns. Hence, as in the case of the child, every action should have its consequences, pleasant or unpleasant.

"Hence, again, it is necessary to provide for the patients' surroundings which shall be as pleasant as possible, and, in every instance of misbehaviour, to remove the culprit temporarily from these surroundings.

"This has two advantages. Firstly we prevent the turbulence of a single patient from causing annoyance or excitement among the others. Secondly, the patient is made to feel, temporarily, the unpleasant consequences of his behaviour.

"Isolation must, however, be for a very short space of time. As soon as possible the patient should be brought back to his normal surroundings, and given an opportunity to make a fresh attempt at orderly behaviour. Isolation may be carried out by putting the patient to bed, or by placing him in a single room or in a continuous bath, but I repeat again that it must be of very short duration—an hour at the outside, and shorter if possible.

"At the same time it must be borne in mind that action must be taken the moment the patient shows the first signs of agitation or turbulence. It is of the greatest importance that excitement should be prevented from spreading

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to the other patients. A single patient cannot be allowed to upset a group. The quiet and orderly character of the environment must be firmly maintained.

" Experience has taught us that in the majority of cases excitement is not a result of the morbid process, but is really a reaction to external stimuli. In many cases it is caused through our own fault ; sometimes the treatment is defective, sometimes the approach to the patient has been unskilful or tactless ; sometimes excited patients are left alone too long or are allowed to upset other patients. There is plenty of explosive material about, but it is our duty to see that the spark does not reach the powder.

" Therefore the greatest quietness should prevail, and, in particular, unnecessary talking should be avoided.

" The work should be as educative as possible, and a great variety of occupations should be available. A system of rewards helps to instil into patients the notion that work is of benefit to themselves, as well as to enhance their feeling of personal value.

" To sum up : The fundamental principle of the system is the application of pedagogical methods to all cases of psychosis.

" It is obvious that to carry out these methods with success suitable material conditions must be provided ; and probably the most difficult to obtain is a staff sufficient in numbers and quality who, in addition to special training, are of sufficiently high cultural standard to enable them to apply intelligently these elementary pedagogical methods."

It will be seen, then, that the Simon " active " therapy re-introduced the notions of discipline and social responsibility ; that it involves substantial improvement in the material comforts provided for the patients ; that an absolutely essential element is the training of the staff in the attainment of the same degree of self-restraint that is expected of the patients, and a meticulous adjustment of the personality of the nurses to that of the patients under their care. It involves, in fact, a reaching-out beyond the " general hospital " standard—still often held up as the ideal to be attained by mental hospitals—and a new appreciation of *mental* nursing as a vocation.

A few outstanding impressions may be added of conditions at Santpoort. The increased responsibility and status of the medical officers, each of whom (assisted by a house physician) has complete control over the patients' activities in his own section. The extreme patience with which the painfully slow re-education of catatonics is pursued. The doctor refraining, temporarily, from entering a class-room where his presence was known to irritate a particular patient. The group of paranoid women, previously querulous and unemployable, working under a male instructor, a man whose somewhat eccentric personality had made him a difficult colleague on the male side, but who proved an outstanding success here ; this latter not, of course, an essential feature of the system, but an example of how convention is not allowed to stand in the way of the patients' welfare. The ease with which the products of the patients' work are disposed of, in the institution itself, to other institutions and in sales to the public. The brightness of the wards, with their well-designed furniture and colour schemes, providing the " pleasant environment " essential to the

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system, while at the same time affording excellent scope for the employment of patients at decorative work of all kinds.

It is obvious that, compared with the magnitude of the reform envisaged, the question of the employment or not of an occupations officer is not a matter of major importance, and must depend on local needs. The Board of Control's memorandum makes out a strong case for an occupations officer outside the ranks of nursing staffs. On the other hand, many would prefer such a post to be filled by a " doubly trained " nurse, *i.e.*, one who has had a full training in both nursing and occupation therapy. In any case the functions of the occupations officer must be clearly defined. While it will be agreed that he or she should not exercise the controlling authority that should belong to the medical officer, the post should not be degraded to the mere running of an " arts and crafts " or " fancy-work " department. It seems hardly necessary to add that to expect the occupations officer to carry out unaided the treatment of patients who are turned over to her for a limited period, possibly of two or three days a week, is a practice that bears no relation to any therapeutic method, and can only serve to bring the name of occupation therapy into disrepute. It is agreed by all that to ensure continuity of treatment, the nursing staff must co-operate, and that every nurse should be given some form of training.

Another fallacy that should be mentioned here concerns the relation of occupation therapy to the utility departments of the hospital. The sharp distinction which the Board of Control's memorandum emphasizes between therapy and mere occupation, is often wrongly taken as synonymous with a distinction between the " occupations department " and the utility departments. This distinction is especially liable to be made on the female side. It is still believed by some that the " occupations department " should serve mainly as a recruiting ground, preparing patients for promotion to the workroom, laundry and kitchen, while patients who can be fitted into one of these latter departments without such preparation need no further attention from the occupational point of view. This view overlooks the therapeutic use that can be made of the ordinary hospital activities, as well as ignoring the very varied standards of skill required for different kinds of work both in the utility departments and in the " non-utility " occupations. A patient, for instance, who has been successfully re-educated through an awakening interest in gardening will not be benefited by removal to the needle-room; and the fact that a schizophrenic is able to do simple folding in the laundry in a mechanical fashion does not mean that she is not urgently in need of re-educative activities if deterioration is to be prevented. In some hospitals the same gang of men is employed for years in pulling a cart in the grounds; at Santpoort this work is reserved for turbulent and deteriorated patients who are to be re-educated, and no patient is kept at it for more than a few weeks.

It may be that British mental hospitals may be able to evolve an occupational system in which the best features of American methods may

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supplement the more fundamental reforms of "active" therapy. The emphasis that has been laid in these notes on the latter system is not meant to detract from the value of the former, and especially of the amount of research into the application of the methods to particular types of patients which has been carried out largely by occupation therapists themselves. In our Epitome section there will regularly be found abstracts from the American journal, *Occupation Therapy and Rehabilitation*, and we are glad to welcome a similar publication recently started in Canada. Miss West's article, which will be found elsewhere in this issue, puts the therapist's standpoint very clearly. Since the Board's memorandum was issued more than one hospital in this country has copied the Simon system so far as to make it possible for them to act as centres of instruction for others. We shall endeavour to give their efforts full publicity, so that members of the Association may have the benefit of their growing experience in this new and hopeful venture.

A. W.

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Part II.—Reviews.

Psychology of Sex. By HAVELOCK ELLIS. London: William Heinemann (Medical Books) Ltd., 1933. Pp. xii + 322. Price 12*s.* 6*d.* net.

When the great British master of sexual science gives us a new volume, we expect something quite apart from the stream of books on sex, some futile, some actively mischievous, which flows from the press, nor are we disappointed.

The book was urgently needed. It is primarily intended for medical students and practitioners. It is unfortunately true that the medical student gets no adequate instruction upon the vital subject of sex in its psychological and social connections; and the practitioner is often less well informed than his patient. In this book the student or practitioner will find all that, for ordinary purposes, he requires to know, while an ample bibliography directs him to easily available works in the English language, should he desire to carry his studies further. But the book is of far more than purely professional interest. There are certain sex details with which all should be acquainted.

A modern author on sex topics is obliged to indicate the attitude which he adopts towards the psycho-analytic theory. Dr. Havelock Ellis gives due credit to Freud for his work in the field of sex, but is no partisan, and believes that others have hold of some aspects of the many-sided human psyche.

Having premised that a knowledge of anatomy and physiology, even of pathology, is insufficient for the comprehension of sex, Dr. Havelock Ellis begins with an analysis of the sex impulse. He prefers the term "impulse" to the more generally used term "instinct", and he gives good reasons for so doing. He explains the division of the impulse into tumescence and detumescence, contrectation, as originally described by Moll, being considered as a part of the latter process. Having discussed the biology of sex, he traces the growth of the sexual impulse in youth, and deals with the *libido*—a term which he considers unhappily chosen. (We venture to suggest the substitution of the term *conatus*.) He urges the need of adequate sex instruction for children, a need which is all the greater because of the general unrest in these matters, which makes childhood an even more critical stage than was formerly the case. But the child must not be taught to regard sexuality as commonplace, as on the same footing as nutrition and excretion. There are excellent remarks upon masturbation—a practice which, after adolescence, is stated to be probably more common among women than among men.

The book then passes to the consideration of sex deviations—a term which the author prefers to that of perversions. The emendation is to be accepted, for it avoids any suggestion that there is but one fixed pattern of sex. Further, the term "perversion" implies a moral judgment, while that of "displacement" (adopted by some) involves a static conception, whereas the sexual impulse is dynamic, living, and liable to change. Those who have no experience in dealing with such cases may be surprised at the vast range of kind and degree which these deviations cover. Childish deviations persist, in some varying

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form and degree, into adult life. It is only allowable to style them perversions when they are so magnified as to replace the desire for the central act of sex-union, and when they have diminished or abolished the ability to perform that act. Much good advice is provided on the treatment of deviations in childhood. Passing to adult examples of deviation, the difficulty experienced by courts of law when such matters as exhibitionism are brought before them is fairly faced, useful suggestions being made which should assist those who are called upon to advise in these cases. Homosexuality is dealt with in a separate chapter. The wide distribution of this condition is described, and its connection with neurotic conditions is discussed. Congenital sex inversion is regarded as being akin to a biological variation. This chapter should be read by law-makers and administrators.

Another chapter, perhaps the best in the book, deals with marriage, and with the difficulties which are so often encountered in that state of life. Every physician is confronted with these problems among his patients. Such matters as the frequency of coitus, the practice of contraception and the methods thereof, the childless marriage, and divorce, are dealt with among many others. On the practice of *coitus interruptus* the author takes a less severe line than is usual. After the rubbish which is indulged in by so many modern writers, it is a pleasure to read Dr. Havelock Ellis's reasonable but lofty ideal of the marriage relation.

The volume contains a mass of information which cannot be obtained elsewhere in so compact a form. The matter is presented with the inimitable charm which adorns all that the author touches. It is almost an impertinence to praise anything which Dr. Havelock Ellis has written. But we cannot forbear an expression of admiration for the restrained and balanced manner in which he has treated his subject—a subject which has been so confused and clouded with prejudice and superstition. We may sum up in his own words: "In the impulse of sex, alike in its natural manifestations and in its sublimations, for the two go together, and neither can flourish with the complete suppression of the other, we possess a great hope for our future civilization." This book is the latest of a long series of works by its eminent author. Others have given best at first. All Dr. Havelock Ellis's wine is excellent, but he has kept the supreme vintage until now. M. HAMBLIN SMITH.

General Principles of Reflexology. By VLADIMIR MICHAILOVITCH BECHTEREV. Translated from the Russian of the fourth (1928) edition by EMMA and WILLIAM MURPHY. London: Jarrolds, 1933. Pp. 467. Price 21*s*.

It is difficult to realize the great debt we owe to the Russian school of "reflexology", partly because of the disturbed state of the country during the last sixteen years, and partly owing to the fact that books in the Russian language are so seldom translated into English. To very many in this country Pavlov and Bechterev are merely names; Krasnogorski, Beritoff, Ivanov-Smolenski, Chuchmarev, Linz and many other brilliant workers are quite unknown. Yet these men have produced a tremendous amount of very sound research work which is only beginning to be noticed in this country. Although *General Principles of Human Reflexology* first appeared in Russian in 1917, it is the first of the author's works to appear in English, and that nearly six years after his death.

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Reflexology Bechterev claimed to be a new science, a special branch of biology, having as its aim the severely objective study of personality. Much of the work he did is being continued at the Reflexological Institute for the Study of Brain in Leningrad, an institute which he founded in 1907 as the Psycho-Neurological Institute, and which had a struggle for existence until after the Revolution.

Reflexology is stated to confine itself to the external peculiarities of the activity of man, his facial expressions, gestures, voice and speech. Bechterev replaces terms such as "intellect," "feeling," "memory," "will" and "attention" by "higher and personal reflexes," "mimico-somatic reflexes," "reflexes of concentration," "of reproduction," etc. All his work is based on many years of painstaking research on the anatomy and physiology of the nervous system, so that although at first reading we may not understand or agree with much that he says, it behoves us to pay the greatest respect to it. For some psychologists the study of reflexes is merely a laboratory exercise with no practical bearings; for the reflexologists it is the basis of all learning. The truth will probably ultimately be found to lie between the two, but perhaps closer to the reflexologists' than the academic psychologists' view. There are many who would prefer to use the term "response" instead of "reflex," but it is not such a definite expression. The author has the greatest faith in his system of reflexology, and looks on it as the true explanation of psycho-analysis. Freud's repression corresponds to inhibition, conversion to substitution, etc. He almost hails Jung as a reflexologist, because of his word-association investigations which constitute, of course, an objective method. As Adler's theories are based on subjective examinations, they are weak. Freud's views on adult dreams do not satisfy Bechterev. What Freud calls the censorship, he regards as due to the inhibitory influence of that complex of association reflexes which is closely bound up with the personality of the individual, this inhibitory influence being exerted in respect of such association reflexes as stand in opposition to the complex, are irreconciliable with it, and are therefore suppressed.

In his concluding paragraph the author gives an index of his whole-hearted support of reflexology by stating that "the future will replace the modern psychology of art by the reflexology of art".

We are very greatly indebted to Emma and William Murphy for producing such an excellent translation of a book which, although in many places it will be voted "heavy going", is nevertheless most fascinating. They have provided an excellent author- and subject-index, not given in the original. It is a pity that the book is marred by quite a number of irritating errors in the proof-reading. G. W. T. H. FLEMING.

Year-book of Neurology and Psychiatry, 1932. By P. BASSOE and F. G. EBAUGH. Chicago: Year Book Publishers, 1933. Pp. 488. Price $2.25.

This useful year-book lives well up to the standard of its predecessors, although it really is little more than a collection of abstracts with rather fuller clinical details given than is the practice in epitomizing.

327 pages are devoted to neurology, and 137 to psychiatry. The section on neurology contains little that is not familiar to most of our readers. The authors consider the outstanding contribution of the year to be Cushing's

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description of basophilic adenoma of the hypophysis, which has been rightly named Cushing's disease. The illustrations of this clinical entity are good.

In the preface to the psychiatric section the writers deplore the lack of well-organized research in the psychiatric field. This is a thorny subject; few men who do original research and have the knowledge and ability to carry it out have any liking for being "organized", and it is a question whether organization of research would not do more harm than good.

Some of the articles included are rather trivial, or of limited interest.

G. W. T. H. FLEMING.

Psycho-analysis of the Neuroses. By Dr. HELENE DEUTSCH. Translated by W. D. ROBSON-SCOTT. The International Psycho-Analytical Library, No. 23. The Hogarth Press and the Institute of Psycho-Analysis, 1932. Pp. 237. Price 10s. 6d.

This volume consists of eleven lectures by the author, who is Director of the Vienna Psycho-Analytical Clinic. After an introduction on the part played by the actual conflict in the formation of neurosis, five lectures deal with hysteria, three with the subject of phobia, two with the obsessional neurosis, and an appendix on melancholia and depressive states is given in conclusion.

It is initially pointed out that instruction in psycho-analysis must essentially differ from all other forms of clinical instruction in that clinical demonstration can find no place in such education. These lectures endeavour to fill up this void. Typical cases that have been analysed by Dr. Helene Deutsch are described, and theoretical consideration of their histories follow. A basic knowledge of the subject is assumed.

In the Introduction the main ætiological factors in tracing the source of neurotic disease—fixation of the libido, regression and the so-called current or "actual" cause—are illustrated in the cases of three married women who were placed in a typical conflict situation. Briefly it is demonstrated how in each the same cause and type of frustration were at work, and how none of them, because of their neurotic disposition, was in a position to resolve the conflict normally. Why the clinical picture presented in each case was different is logically deduced. One becomes subject to typical hysterical attacks, another falls ill of agoraphobia, while the third develops obsessional impulses. In this way, within the compass of a comparatively few pages the student is led to understand the emotional dynamics of a neurosis and the foundations of the psycho-analytical approach.

Later various forms of hysterical illness are discussed on the basis of the described analyses. The first case chosen (in which clinical symptoms are lacking—a "healthy patient") is termed a "fate-neurosis", by which is meant a form of suffering traceable back to repressions which arose in that period of childhood in which infantile sexuality had reached that stage which corresponds most nearly to the adult sexual life. The real motive of this fate lies in a constant insoluble inner conflict. There is a difference between a fate-neurosis and a so-called neurotic character, but only a quantitative one. The former seems more adapted to treatment, "because the blows of fate are in this case conditioned by the same inner motives as neurotic symptoms. Indeed the suffering of the individual will be accessible to analytical therapy in so far as he himself recognizes it to be morbid".

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In the chapter on hysterical conversion symptoms the analysis of a case of impotence is described, and the re-activated symptoms of *pavor nocturnus* and bed-wetting are discussed at some length. The next lecture deals with the analytic history of a fifteen-year-old girl who exhibited fits and trance states, and three others throw light on the mechanism of anxiety-states, either diffused or comprising definite phobias. The illustrative cases "seem to confirm the view that in contrast to hysterical conversion-symptoms, the phobia is characterized by a stronger regressive tendency in the sense of sadistic-aggressive impulses". The super-ego behaves more severely than in hysterical conversion, and brings the ego into those dangerous situations which can be projected in the phobia, and thus take on the character of an external danger, and so be avoided. In agoraphobia the patient identifies himself with the object of aggression, the ego thus experiencing the death threat. In all phobias the inner danger is projected outwards and attached to some special object or situation. The ego thus substitutes an avoidable danger for an unavoidable one.

Obsessional acts and ideas are then treated of analytically, and though psychotic states lie outside the province of these lectures, melancholic depression, one of the so-called narcissistic neuroses, is considered here, since this throws so much light on the understanding of neurosis.

It would take up far too much space to review the many interesting and personal contributions which Dr. Deutsch here makes to the psycho-analysis of the neuroses. It is certain that a good deal of knowledge of the subject will be needed before the contents of this volume can be adequately appreciated. Most assuredly the aim of the book is well fulfilled. Literary material dealing with as much of the clinical aspect of the neuroses as is possible is always welcome. C. STANFORD READ.

Psycho-Analysis and Medicine. By KARIN STEPHEN, M.A., M.R.C.S., L.R.C.P. Cambridge University Press, 1933. Pp. 238. Price 8*s.* 6*d.*

Dr. Stephen has written an excellent book, one that is sure to appeal to all who require a general and fairly full description of psycho-analysis without, for all that, wishing to delve too deeply into the more controversial refinements.

The author has a pleasant style, and at her hands the whole subject seems to develop easily, and unfolds itself without the gaps and subsequent retracing of steps so noticeable in many books of this kind. Her method of exposition takes into account some possible criticisms of psycho-analysis, but the thread of description never gets lost in a mass of conflicting arguments. Moreover, clinical examples are judiciously used without being abused.

The eight chapters of the book are based on eight lectures delivered at Cambridge; this probably accounts for a constant repetition of the first personal pronoun, that at times proves a little irksome. The summaries at the end of each chapter are helpful, but we do not think that their usefulness justifies the absence of an index.

We can thoroughly agree with Dr. Ernest Jones when he says in his preface that it would be difficult to think of a better introduction to this complex study than that which this book offers. J. ERNEST NICOLE.

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Psycho-Analysis and its Derivatives. By H. CRICHTON-MILLER, M.A., M.D., M.R.C.P. London: Thornton Butterworth, Ltd., 1933. (Home University Library, No. 164.) Price 2*s.* 6*d.*

In this little book, Dr. Crichton-Miller has done good service to the student who finds his first acquaintance with psycho-pathology resulting in a motley confusion of ill-digested theories and points of view. Such a clear account of the three main schools as is here presented should do much towards straightening out the tangle, and the critical note introduced here and there will enable the beginner to preserve an open mind until such time as he has to decide for himself under what banner he intends to serve.

In the first chapter psycho-analysis is described, including the newer formulations in terms of ego, super-ego and id. The exposition is clear and succinct with the exception of a few passages, such as that on p. 68, where it is said that the libido (if dammed up and not attached to the ego) is either "repressed into the unconscious ego or into the id". Although Ferenczi is mentioned, more attention might perhaps have been paid to his "active technique".

Chapter II consists of some criticisms of psycho-analysis, and in Chapter III comes a general account of the Zurich school. While the description of Jung's views concerning the ego, the persona and the "shadow" are not very clear—has any author ever succeeded in making all Jung clear?—many sections are specially lucid—for instance, those on the compensatory function of the unconscious, and on the archetypes. An opportunity might have been taken of explaining Jung's peculiar use of the term "rational" (meaning *evaluating*), as applied to thinking and feeling types in contrast to "empirical" (sensational and intuitive) types. Readers might have welcomed, too, an account of the therapeutic task of the "uniting of opposites" so stressed by Jung, the reconciling of the collective with the individual, the non-rational with the rational.

After a summary of points of contrast between Freud and Jung, there is in Chapter V a very adequate account of Adler. Chapter VI contains a précis of Prinzhorn's work. Without denying the value of this last, we wonder at its inclusion as a derivative of psycho-analysis; there would have been at least as much justification for the mention of such writers as McDougall, McCurdy, Rivers or even Kempf.

The bibliography is a little disconcerting, for many important books on these schools are omitted. If this is in order to keep the list small, then why include books that have nothing to do with the subject? Thus, Koehler's book on *Gestalt* appears, although neither the subject nor the author are mentioned in the text.

The above criticisms are, however, in no wise meant to be destructive, and this handy little volume should prove a useful addition to the lamentably small number of good elementary and descriptive books on the difficult subject of psycho-analysis and other schools derived therefrom.

J. ERNEST NICOLE.

What we put in Prison. By G. W. PAILTHORPE, M.D. London: Williams & Norgate, Ltd., 1932. Pp. 159. Price 5*s.* net.

The author states that through the contents of this small volume she has endeavoured to persuade her readers that "evil" as labelled crime is not intrinsically different from "evil" not scheduled as such, and that the so-called

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criminals of her case-histories should be regarded as psychologically sick or defective persons, and not "evil" for the sake of being "evil". Her aim is also to coax her readers to view these prison inmates in the light of the Freudian theory. The data upon which the book is based were selected from the results of an investigation into the psychology of criminals and of inmates of Preventive and Rescue Homes, which Dr. Pailthorpe carried out at the request of the Medical Research Council.

In Part I, after the briefest of historical surveys of the subject, the present illogical treatment of the criminal is dealt with in its many aspects, and the importance of the psycho-analytic viewpoint stressed. It would seem a mere matter of common sense that instead of dwelling mainly upon the question of what punishment any particular criminal offence merits, that the more difficult problem of what treatment is needed to render the individual socially adaptable should be the principal consideration. That the criminal and not the crime must be the focus of attention has for long been the slogan of scientific criminologists. Now that modern psychology has thrown so much light upon the motivation of human conduct, this method of approach becomes all the more evident and important. Psychology also gives us added insight into the attitude that society takes up when its laws are transgressed. Through unconscious identification the offender becomes a scapegoat, and his punishment allays our own sense of guilt. So, in discussing the treatment of criminals, rationalizations oppose logical argument. Society has no knowledge of its own subjective impulses, and has its eyes on the offender only. Reform comes but slowly, and only when the community wholeheartedly want it.

In Part II the case-histories of twenty prisoners, with the author's comments thereon, excellently illustrate the futility of our penal system, and how helpful the application of psychological principles could be.

In Part III these principles are well summarized and suggestive conclusions logically deduced. It is patent enough that the means taken to-day to deter crime or reform the criminal fail lamentably. There is a real necessity for a full investigation of all cases that come into the public courts, and psychotherapeutic treatment should be available for every case where necessary. Malefactors must be looked upon as sick persons. Asocial behaviour can almost universally be traced back to childhood days, and it is well said that "if we once realize that criminal actions are not the product of a momentary impulse but the outcome of a pathological pattern of psychology, it follows that the earlier we discover the pathological condition, and the earlier we treat it, the more likely we are to save such children from a criminal career".

Just as we in the present day regard the punishments meted out to criminals in the last century with horror, so will future generations denounce our administration of justice. It is little more than a century ago that a child of ten was sentenced to death for stealing two pennyworth of paint! It seems that the law is jealous of its prey, and that the legal and the psychological points of view must for long be in opposition. Mr. Justice Avory only a few years ago in opening the Assizes made the reactionary statement that he doubted that crime would abate "if the infliction of the penalties of the law is to be left to the discretion of experts in Harley Street, for the only real deterrent to crime is that the appropriate penalty will follow upon its commission". History in no way confirms this. There are, however, distinct signs of a saner outlook, and Dr. Norwood East, the Medical Commissioner of Prisons, has lately urged that a medical psychologist be appointed to treat selected prisoners by psychological methods.

It is such books as Dr. Pailthorpe's which will prove helpful in educating

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the layman to a new point of view. At present the traditional methods of our penal system are taken for granted, and little, if any, thought is given to such a vital problem. C. STANFORD READ.

Problems of Population. Edited by G. H. L. F. PITT-RIVERS, B.Sc. London: George Allen & Unwin, Ltd., 1932. Pp. 378. Price 15s. net.

This volume contains the text of the papers read at the meeting of the International Union for the Scientific Investigation of Population Problems held at London in June, 1931. The modern interest in these problems dates from the time of Malthus, but the manner in which the questions are appreciated has altered. The original problem was conceived almost exclusively in terms of density in relation to food supply. Many other conditions have to be considered to-day. An economically unabsorbed population can co-exist with a food surplus.

The papers range over a very wide field, and all are of interest to the non-technical reader, with the exception of a few, the comprehension of which involves the knowledge of somewhat advanced mathematics. Such subjects as the conditions which influence population density, the effects of migration restrictions, the relation between population and food supply and the comparative fertility in different social classes are discussed.

Some of the papers have a very definite medical interest. Malthus envisaged population as a menacing force brooding over humanity and threatening it with a burden of misery. To-day we regard population as another of the forces of nature which can be controlled in the interests of humanity. The change has been brought about by the adoption of contraceptive measures and (in some countries) by the practice of induced abortion. These subjects are complicated by social, economic and religious considerations. But whatever our personal views may be, the questions involved must be faced. The growth of mass-production has contributed to the evolution of a higher standard of living, indicated by a general demand for things which, not so long ago, would have been regarded as luxuries. Another factor in the situation, discussed by Dr. George W. Kosmak, is the increasing dread of the discomforts and dangers of pregnancy and labour, and this is, of course, intimately connected with the puerperal death-rate, and with the tendency to postpone marriage. Further, it is a question whether our increasingly complicated civilization does not tend to a reduction of natural fertility, quite apart from the use of contraceptives. On all these topics our profession should be prepared to take its share in the guidance of public and individual opinion. But we cannot act as guides unless we have studied the paths for ourselves.

M. HAMBLIN SMITH.

The Causes of Evolution. By J. B. S. HALDANE. London: Longmans, Green & Co., Ltd., 1932. Pp. 235. Price 7s. 6d.

The book, which is based on a series of lectures, presents concisely one of the modern views of the subject. It constitutes a useful survey, since much of the evidence adduced in support of its tenets depends on researches carried out by various workers in very recent years, and it draws attention, moreover, to several papers of earlier date that have been generally overlooked.

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The author's main argument is that the power of natural selection (in conjunction with the organism's capacity for variation) is sufficient to have brought about evolution. One of the principal exponents of mathematical theories, as applied to biological problems, he indicates how the effectiveness of selection in determining the fate of variations in different circumstances may be actually measured. He also gives plausible explanations for the evolution of useless and incapacitating characters. His standpoint differs from that of Darwin, first, in its emphasis on the importance, in evolution, of the sudden origin of new species by mutation or hybridization; secondly, in its recognition of the tendency of variation in a given species to occur in certain definite directions rather than completely at random; thirdly, in its denial of any evolutionary importance in acquired characters; and lastly, in its explanation of heredity in terms of Mendelian interaction of genes. A diversity of clear-cut examples are given, in which intra-specific variations, and even inter-specific differences, are shown to be the outcome of physical and demonstrable differences in chromosomal constitution.

A question dismissed somewhat unsatisfactorily is that of the heritability of characters acquired in response to such environmental factors as have acted on a species for many consecutive generations. The author's contentions that "little real novelty has been shown in the course of evolution", and that the reshuffling and rare mutation of genes will adequately account for all heritable variations, are likely to leave some readers unconvinced.

In his conclusion the writer treats in a brief but entertaining manner some of the philosophical aspects of the subject. The evolution of mind and the influence of mind on further evolution are both referred to here, but a discourse on eugenics is not undertaken.

About one-fifth of the book is occupied by an appendix, in which mathematical treatment is given of such problems as the causes influencing intensity of selection in various types of populations. While a good deal of space is certainly spent in demonstrating the obvious, some unexpected propositions are proved. It is established, for example, "that a normally distributed population cannot be in stable equilibrium as a result of selection for the character normally distributed". Though valuable to the specialist and very clearly presented, this appendix will, as the author remarks, "have a limited appeal"; but the body of the book should prove pleasant reading as well as useful and suggestive to many who are interested in biological subjects.

CATHERINE L. T. LUCAS.

Experimental Analysis of Development. By BERNHARD DÜRKEN. Translated by H. G. and A. M. NEWTH. London: George Allen & Unwin, Ltd., 1932. Pp. 288. Price 14s.

This is a textbook of convenient dimensions, which covers the whole field of experimental embryology. It is intended to render easily available to biology students and medical men the advances lately achieved in our knowledge of some fundamental problems. It will be valued as such, for it is clearly and methodically written and beautifully illustrated. By a careful analysis of the often very remarkable experiments described, the theory of epigenetic as opposed to preformational development is built up. The fertilized egg, or the embryo at any age, is envisaged as a system in which neither the definitive parts nor even all the genes are represented individually by matter. It is

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a system in which the substances present gradually give rise to more numerous and varied products by interaction with each other and with the environment; the chromosomes are important, but by no means the only essential factors, and all the series of changes are very susceptible to modification. The theory is developed logically, and numerous experiments, both classical and recent, are cited to illustrate such matters as the potency of the egg cytoplasm, the influence of one organ on another and the modifying effects of the environment. Convincingly established is the truth that the various parts of the embryo react on one another in such a way that it is often the organism as a whole that appears to be determining which of various potential courses of development shall be adopted by one of the parts. Thus, when two developing eggs of *Triton*, belonging to different species, both in the 2-blastomere stage, are artifically made to adhere together, the fate of the cells is so modified that a single, perfect embryo arises from the aggregate thus formed.

Our rapidly increasing knowledge derived from transplantation experiments is interestingly portrayed, but, unfortunately, the book was written before the sensational organizing effects of non-living grafts were made known by various workers. The section on hormones strikes one as disproportionately brief. The general discussion and reconciliation of conflicting theories is ably handled. Although its function is that of a short survey, most readers will wish that the book included more often the names of workers and dates of their publications. No precise references to the literature are given at all.

The translators have been conscientious, and when faced with alternatives have deliberately chosen a literal rather than an elegant rendering; but the occasional roughness resulting is only a minor blemish, and there is no doubt that we owe them a great debt for rendering the work easily accessible to English-speaking circles. CATHERINE L. T. LUCAS.

The Tides of Life. By R. G. HOSKINS, PH.D., M.D. London: Kegan, Paul, Trench, Trübner & Co., 1933. Pp. xi + 352. Plates 6. Illustrations 6. Price 15s.

The standard of the general reader in America must be of a very different calibre to that in this country if *The Tides of Life* is meant for him. We cannot imagine anyone without a solid foundation of biology being able to understand this book. Dr. Hoskins, in his preface, is careful to point out that he has tried to keep clear of "marvel-mongering", and he has succeeded, but we do not think he has provided a book which is of real value to the general reader, using that expression in its widest sense.

Nevertheless, to anyone who has had a grounding in biology and science the book will prove of great value, and it would be difficult to imagine a better balanced statement of the position of endocrinology at the end of 1932.

The author does not appear to have a very high opinion of research in mental diseases, possibly from lack of knowledge of what has been and is being done, and of the literature published each year. The statement (p. 81) that "it is unfortunate that research in psychiatry lags far behind that in other branches of medicine" is simply not true, unless the author were to qualify it by writing "endocrine research".

We do not think that suggestions as to research problems for psychiatrists

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and experimental psychologists should find any place in a book written for the general reader.

The author constantly emphasizes the need for caution in accepting wholesale statements made by enthusiastic endocrinologists. He draws attention to a statement made by Berman that " studies of intellectual man, and of those with a keen instinct of curiosity and a constructive acquisitive trend, prove them to be ante-pituitary dominant in their make-up ", and points out that this amounts to little more than sheer guessing. We quite agree with him.

He gives a short account of Cushing's disease, only recently described, and he tells us that it is otherwise designated as " pituitary basophilism ". What *can* the general reader understand by this ? G. W. T. H. FLEMING.

A New Approach to Dietetic Therapy. By E. FÖLDES, M.D. Boston: Badger, 1933. Pp. xii + 434.

Dr. Földes has devoted a whole volume to the consideration of water and mineral metabolism without touching on the subject of œdema.

The writer considers that disturbances of the water and mineral metabolism are important pathogenic factors in epilepsy, eclampsia, migraine, angina asthma, allergy, gout, etc. He points out that two kinds of disturbances of the water and mineral metabolism are met with—(1) a general retention, and (2) mobilization and consecutive local accumulation of water and minerals previously retained throughout the body.

The book is divided into three parts dealing with (1) the physiology and general pathology of water and mineral metabolism, (2) special pathology of retention and mobilization of water and minerals, and (3) therapy. In the first part it is shown that the pouring out of hydrochloric acid into the stomach must no longer be looked on as a mysterious secretion, but that it follows the Donnan equilibrium law for physico-chemical membranes.

The author believes that the development of epileptic attacks is due to a temporary accumulation of liquids in the tissues and space enclosed by the membranes of the brain, this leading to irritation of cortical centres. This accumulation is due to two factors—(*a*) a general disturbance in the metabolism of water and minerals and a local predisposition of the brain. The results of treatment developed on these lines only refer to five cases, and are not convincing, especially as luminal was given in four cases in addition.

He considers that acute uræmic convulsions are preceded by prodromal symptoms which are identical with those of migraine. Apparently migraine is only epilepsy of a lesser degree of severity. When the accumulation of liquids reaches a certain level then epilepsy develops ; below this level the condition is migraine. The author treated 14 cases of migraine by anti-retentional treatment and found a marked improvement. The treatment was most successful at the commencement, but gradually lost its effect. Luminal was given at the same time. The results, as with epilepsy, are not convincing, and we must reserve judgment until results covering much larger numbers are produced.

G. W. T. H. FLEMING.

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Occupational Misfits. By SHEILA BEVINGTON, B.Sc. London: George Allen & Unwin, Ltd., 1933. Pp. 102. Price 6s. net.

Miss Bevington investigated the cases of 200 unemployed lads in their eighteenth year, living in the Tottenham district of London; she also investigated the cases of 200 employed lads, of similar age and of similar social standing, from the same district. Some striking results emerge from the comparison of the two groups. The unemployed lads had distinctly worse industrial records than the employed lads, and the reasons given for leaving posts were markedly less creditable in the cases of the former group. The average intelligence of the two groups, as measured by school-leaving standard, was almost identical; but as regards character, the average unemployed lad had received school reports of distinctly inferior standard to those of the employed lad. It is clear that temperamental factors are of greater importance than economic or intellectual factors in determining a lad's industrial success. Lack of occupational aim on leaving school was a marked feature in the unemployed group. Very many of the lads had received no vocational guidance. The choice of a suitable career is so important that Miss Bevington supports the creation of a special class of "careers-master". Dr. C. S. Myers contributes a foreword to this interesting piece of social research.

M. HAMBLIN SMITH.

La Formacion Espiritual del Individuo. By Dr. HONORIO DELGADO. Lima: Libreria Peruana, 1933. Pp. 152.

Dr. Delgado has compressed a vast mass of material into this little volume. He gives a sketch of the main schools of modern psychology, being careful to indicate the essential difference between the deterministic system of Freud and the teleological system of Jung. He traces the course of individual human development, and draws an interesting parallel between the various stages of this development and the passage of the race from the simian epoch, through the savage and barbarous epoch, to our present civilized stage. We may, perhaps, venture to doubt whether the influence of the intelligence is quite so predominant in the final stage as Dr. Delgado appears to suggest. He gives excellent advice for training at each stage of development, his remarks upon family influence being specially striking. He has some wise observations upon education and other matters relating to mental hygiene. Universities are, as he says, the depositories of the treasure of tradition; but they must not allow themselves to be unduly conservative, nor must they place too much reliance upon the methods of physical science, to the neglect of the things of the mind. Altogether, this is an excellent little book, upon which we have much pleasure in congratulating the author.

M. HAMBLIN SMITH.

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Part III.—Epitome of Current Literature.

1. Anatomy and Physiology.

The Cranial Nerve-roots: A New Classification [*Le radici nervose encefaliche: Nuova classificazione*]. (*Riv. di Pat. Nerv. e Ment., vol. xxxix, p.* 415, *May-June*, 1932.) *Francesconi, G. L.*

The cranial nerves are divided, according to function, into two main groups—(1) those concerned with the relation of the individual to the environment, and (2) those concerned with the vegetative life.

Each group is further divided up. The author places 18 nerves in the first group and 6 in the second, as follows:

I. (*a*) Motor:
1. Common oculomotor.
2. Trochlear oculomotor.
3. Abducent oculomotor.
4. Motor to the muscles of mastication.
5. Facial.
6. Glossopharyngeal motor.
7. Pneumogastric motor.
8. Accessory.
9. Hypoglossal.
10. Spinal.

(*b*) General sensory:
11. Trigeminal.
12. Glossopharyngeal (bodily sensation).
13. Intermediary sensory root of Wrisberg-Sapolini.

(*c*) Special sensory:
14. Olfactory.
15. Visual.
16. Auditory.
17. Taste.
18. Equilibrium.

II. (*a*) Motor:
19. Common oculomotor to intrinsic muscles.
20. Pneumogastric for visceral motility.

(*b*) Sensory:
21. Pneumogastric for visceral sensation.

(*c*) Secretory:
22. Lacrymal.
23. Superior salivary.
24. Inferior salivary.

G. W. T. H. Fleming.

The Direct Pyramidal Tract [*Contribution à l'étude du faisceau pyramidal direct de Türck*]. (*L'Encéph., vol. xxviii, p.* 10, *Jan.*, 1933.) *Nicolesco, J., and Hornet, T.*

A study of lesions of the direct pyramidal tract, based on a group of 14 cases. The authors conclude that this tract is involved in palsies of the upper limbs when the lesion of the nervous system is situated between the motor cortex and the

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capsule, and that it is accompanied by lesions of the crossed pyramidal tract. This was Türck's original view. Crural palsies, on the other hand, do not show any involvement of this tract, and the authors state that it does not extend to the lower levels of the cord. This suggests a connection between the tract and the particularly fine range of voluntary movement in hand and arm, and also with the neck and trunk muscles. The authors suggest a subcortical neuron as the origin of the tract, and believe that it occupies a position between the pyramidal and the extrapyramidal systems. W. McC. HARROWES.

Reflexes and Other Motor Activities in the Newborn Infant. (*Bull. Neur. Inst. N.Y., vol. ii, p. 1, March, 1932.*) *Chaney, L. B., and McGraw, M. B.*

This study is based on the investigation of reflex and other reactions in 125 apparently normal infants. Twenty-five of these infants were examined at the time of birth in the delivery room, and these are termed "partunates". The remaining 100 included 10 for each day during the first ten days of life, and these are termed "neonates". Certain general differences in the responses in the partunates and neonates were demonstrated, *e.g.*, tendon reflexes were more easily elicited from partunates than neonates, but neonates were strikingly more responsive to cutaneous stimulation than were partunates. The following general conclusions were drawn: (*a*) Individual differences are evident in the simplest type of reflex action in newborn infants; the more complex the type of reaction, the more marked is the individual variation. (*b*) Although the variability in type of reaction is great among newborn infants, the total absence of any reflex response is strongly suggestive of a pathological condition. (*c*) Nothing in this investigation has tended to substantiate the contention that certain reflex patterns, such as the Babinski, are, in infants, normal reflex reactions, attributable to an immature nervous system. Reflex reactions of normal newborn infants are different from the characteristic reflexes of normal adults; they are also different from the classical pathological reflex patterns. J. L. FAULL.

Plantar Tendon Reflexes. (*Bull. Neur. Inst. N.Y., vol. ii, p. 312, July, 1932.*) *Weingrow, S. M.*

A distinction between the plantar tendon and skin reflexes should always be made. A number of tendon reflexes of the plantar region, not previously reported in the literature, are described, and are said to be easily elicited in the recumbent position of the patient. The tendons in which reaction to tapping is described were those of the peroneus longus and brevis, tibialis posticus, flexor longus digitorum, flexor hallucis longus and digiti quinti brevis. The reaction consists of plantar flexion of the foot or toes, collectively or individually. The motor cells concerned in the reflex arcs of the plantar tendon responses are located in the fourth and fifth lumbar and first and second sacral segments of the spinal cord. Owing to the proximity of the centres in the cord representing the plantar and tendo Achillis reflexes, the changes which affect the one may also involve the other. There are pathological conditions in which the plantar tendon reflexes are affected, while the Achilles reflex of the same foot may be normal or *vice versâ*. In sciatica the plantar tendons may be more distinctly affected than the Achilles tendon reflex, and so particular attention should be paid to the former. In syphilis of the nervous system the plantar tendon reflexes may disappear earlier than the Achilles jerk, and so their investigation may help in the early diagnosis of this condition. J. L. FAULL.

Further Studies on Individually Acquired Automatic Associated Movements. (*Bull. Neur. Inst. N.Y., vol. ii, p. 294, July, 1932.*) *Brickner, R. M., and Lyons, I. V.*

There is, apparently, a fundamental difference between phyletically and ontogenetically acquired automatic associated movements. Evidence for this contention is adduced from the consideration of certain phenomena observed in

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two cases of paralysis agitans and two of dystonia musculorum deformans. In one of the cases of paralysis agitans rigidity was marked in all four limbs, but in spite of this the patient, who had been a light-weight boxing champion, showed astonishing grace and facility in shadow-boxing and sparring with an opponent. In the other case of paralysis agitans and in those of dystonia similar differences were observed. The authors consider the facts point to separate neuronic patterns for given acts in both the neokinetic and palæokinetic systems, the probability being that the former are situated in the cortex, the latter in the corpus striatum.

J. L. FAULL.

The Relation between Carbohydrate Metabolism and the Function of the Grey Matter of the Central Nervous System. (*Biochem. Journ., vol. xxvii, p.* 523, *No.* 2, 1933.) *Holmes, E. G.*

The capacity of the frog's central nervous system to respond to strychnine injections by convulsions is abolished by iodo-acetic acid, but perfusion for 1½ hours with 0·1% iodo-acetic acid is necessary for complete abolition. Perfusion for the same period with a concentration of ·01% reduces the lactic acid content to a very low level. The abolition of central nervous system function by iodo-acetic acid is partially prevented by the presence of ·5% sodium lactate and ·05% methylglyoxal. The "labile phosphorus", presumably representing the phosphocreatine of the central nervous system, is reduced by iodo-acetic acid more rapidly than the function of the tissue is affected.

The author suggests that the effect of iodo-acetic acid may be chiefly on conduction in the white matter, and that the activity of the grey matter depends immediately neither on phosphocreatine breakdown, nor on lactic acid formation or oxidation.

G. W. T. H. FLEMING.

A Constant Motor Phenomenon of Normal Sleep: Physiological Hypnic Myoclonus [*Su di un fenomeno motorio costante del sonno normale: le mioclonie ipniche fisiologiche*]. (*Riv. di Pat. Nerv. e Ment., vol. xxxix, p.* 481, *May-June,* 1932.) *de Lisi, L.*

The author draws attention to the presence in normal man and animals of slight movements during the first 10–15 minutes of sleep, which cease at the end of half an hour or so. They are rapid, small, wavelike, and quite unorganized. In some cases there may be almost a general convulsion. No part of the musculature is exempt, and the contractions are not influenced by any external stimuli or change in posture.

G. W. T. H. FLEMING.

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2. Psychology and Psychopathology.

The Expression of Fear [*L'expression de la peur*]. (*L'Encéph., vol. xxviii, p.* 1, *Jan.,* 1933.) *Dumas, G.*

The manifestations of fear are divided by this author into two groups—passive and active. In the first the problem is one of the massive inhibition of Pavlov. Such an inhibition, it is suggested, may be brought about by vaso-motor disturbances causing local anæmias in the brain. The passive manifestations of fear consist of a general relaxation equivalent to paralysis, and specially noticeable in the muscles around the eye and mouth. The question of the paralytic effect of fear is not a new conception and was interestingly dealt with by Hudson the naturalist. In the active expression of fear there is a subdivision into apprehensive dread and actual realized fear. In these states there is argued to be a tension of the surrounding muscles of the eye and mouth in contrast to the hypotonus in the passive fear state. This is an exaggeration of the surprise expression. A third section is devoted to associated gesture, divided into submissive voluntary movements and involuntary movements which are protective.

W. McC. HARROWES.

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The Phenomena of Effect [*Les phenomènes d'effet*]. (*L'Encéph., vol. xxviii, p.* 103, *Feb.*, 1933.) *D'Allones, R.*

This article consists of a discussion of the rôle of effect or purpose in perceptive and apperceptive processes. The part played by meaning is not brought out, but the factual or modifying value of this factor is brought out in detail. The substitution of dynamic schemes for the image and association ideas is mentioned, but there is no discussion of the place of Gestalt in this sphere. Conditioned reflexology is mentioned, and a note is made of the discussion between Pavlov and Köhler, where the former admitted the importance of " form " (Gestalt), and the latter of conditioned reflexes. Form in Köhler's sense equals the dynamic scheme.

W. McC. Harrowes.

Conditioned Responses in Children. (*Arch. of Psychol., No.* 148, *April*, 1933.) *Razran, G. H. S.*

The writer describes the work on conditioned responses in children which has issued from the laboratories of Krasnogorski, Chuchmarev and Lenz, Ivanov-Smolenski and Bechterev.

Krasnogorski's laboratory closely resembles that of Pavlov—he uses the same theories and terminology, only working with children instead of dogs. The laboratory of Chuchmarev is not so elaborate as that of Krasnogorski; the work is more concerned with the relation of conditioning to other overt behaviour. The Lenz laboratory is mainly concerned with the study of conditioned salivation in adults. It combines some of the better features of both the Pavlov and Krasnogorski laboratories. In the Ivanov-Smolensky laboratory work has been done on the conditioning of the grasping reflex to some visual stimuli. In the Bechterev laboratory work has been done on children of school age, and on infants under one year. With school-children the standard technique is the use of an electric shock.

The general results obtained by the various workers which can be looked on as of scientific reliability are as follows. Simple positive conditioned responses, in which originally inadequate stimuli have become adequate by virtue of their association with adequate stimuli, have been formed in children a few days old.

The following responses were conditioned in children: food salivation, gastric secretion, motor activities accompanying eating, grasping some object to obtain food, withdrawing from shock, voci-motor responses to nocuous stimuli, laughter, and verbal or incidental association.

Conditioned responses were also formed to chains or successive series of different stimuli. Negative conditioned responses have been formed in a large number of children. Very marked improvements in all phases of conditioning have been obtained by 9 months' thyroidization of a 15-year-old cretin. The speed of formation of the salivary and motor food conditioned responses has been shown to depend on the age, intelligence, physical and mental condition of the subject, as well as upon the intensities of the conditioned and conditioning stimuli and the intervals between their application.

The magnitude of the salivary conditioned response decreases with age, and is much more affected by extraneous stimuli than the motor responses. With the exception of conditioned responses with words as the conditioning stimuli, the repeated administration of the conditioned without the conditioning stimulus results in experimental unconditioning, or in a decrement and final disappearance of the conditioned response. Responses with words as the conditioning stimuli do not as a rule become experimentally unconditioned. The older or the more established the conditioned response, the less readily does it become unconditioned. Other things being equal, the older the subjects the faster the unconditioning, and the more intelligent the subject the greater the speed of unconditioning. The summation of negative conditioned responses results in drowsiness or even deep sleep. Excitable children are reported not to fall asleep, but to become even more excited by the summation of negative conditioned responses.

G. W. T. H. Fleming.

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A Comparative Psychologist's Approach to Problems in Abnormal Psychology. (*Journ. of Abnor. and Soc. Psychol., vol. xxviii, p. 1, April–June,* 1933.) *Hall, C.*

The author describes experiments with rats which developed symptoms, regarded by the author as neurotic, when obstructions of various kinds were placed in the way of their obtaining food. The condition was cured by starving for 48 hours, and remained cured when the rats were replaced on a 24-hour food basis.

The author thinks that much valuable work is to be done on what appear to be neurotic reactions in animals, and pleads for a closer co-operation between comparative psychology and psychopathology. G. W. T. H. FLEMING.

The Babcock Deterioration Test in State Hospital Practice. (*Journ. of Abnor. and Soc. Psychol., vol. xxviii, p. 70, April–June,* 1933.) *Wittman, P.*

The Babcock test of mental deterioration consists in measuring the patient's former level of intellectual ability by a vocabulary test, and then determining the present level of intellectual efficiency by a series of 24 tests of speed and new learning. The difference between the two scores gives an index of the amount of mental deterioration present. The author considers that an index below $-3{\cdot}5$ should be looked on as pathological.

The greatest deterioration was found, as would be expected, in cases of epilepsy, general paralysis, arterio-sclerosis, organic brain disease and alcoholism.

The author did not find evidence of deterioration in schizophrenia. The group designated " alcoholism without psychosis " showed a certain amount of mental deterioration, but not enough to be considered of pathological significance. It is important to realize that the test can only be used as a measure of deterioration, and not as a measure for determining the return of the patient to a non-psychotic condition. G. W. T. H. FLEMING.

The Effects of Noise upon Certain Psychological and Physiological Processes. (*Arch. of Psychol., vol. xxiii, No.* 147, *February,* 1933.) *Harmon, F. L.*

The author found that complex noises further increase that which mental work gives rise to in metabolic rate, heart-rate, and breathing-rate and volume. This increase may be as much as 60% during the first days of an experiment. However, when the subject is presented with the same situation day after day, over a period of several weeks, the noise effects gradually disappear and the working values tend to return to normal. When the subject has become adjusted to a particular kind of noise or to a special manner of presentation of this noise, a change of either will result in a repetition of the adjustment process, although on an abbreviated scale. The effects of noises tend to carry over to a small extent into the recovery periods following cessation of the work. The noises represented a new factor in the subject's environment. The adjustment to this resulted in a temporary impairment of efficiency and a correspondingly greater tax on the organism. G. W. T. H. FLEMING.

A Study of the Resemblance of Parents and Children in General Intelligence. (*Arch. of Psychol., vol. xxiii, No.* 149, *April,* 1933.) *Outhit, M. C.*

The author found a tendency for an individual to marry one of similar ability, and for the offspring to regress toward the mean of the general population. The true relationship in mental ability of two successive generations of a family is approximately ·80. G. W. T. H. FLEMING.

A Clinical Study of Twenty-six Pairs of Twins. (*Psychol. Clin., vol. xxi, p.* 243, 1933.) *White, K. B.*

The cases were unselected. The ages ranged from 5 to 16 years. Twenty-one pairs were of like sex (12 pairs of girls, 9 pairs of boys). Eight different races and a wide range of economic and social advantages were represented. As a whole, the group was of average intelligence. The order of birth of the twins seemed to

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have no effect on the average I.Q. There was a marked resemblance in the I.Q. between the twins. The Kuhlmann-Anderson test showed a higher average I.Q. and a closer resemblance between the twins than did the Binet test. The handwriting of some of the twins was very much alike. M. HAMBLIN SMITH.

The Effect of Self-Interest on Scores made on the Allport Test for Measuring Ascendance-Submission. (*Psychol. Clin., vol. xxi, p. 268, 1933.*) *Manzer, C. W.*

Scores made on the test mentioned above were compared with group ratings and self-ratings. The distribution of the test scores is nearer that of the self-ratings than that of the group ratings. The inference is that the tendency to make flattering scores, admittedly present in self-ratings, is also present to a considerable extent in the scores made on the Allport test. M. HAMBLIN SMITH.

The Psychopathology of Sexual Perversions. (*Proc. Roy. Soc. Med., vol. xxvi, p. 1030, June, 1933.*) *Bennet, E. A.*

The author describes a case which he considers supports his view that perversion is a failure in personal and social integration, an attempt being made to alter this by means of aggressiveness, child-like conduct and perversions. The condition is an attempt to regain a satisfying personal and social life. Perversions and psychoneuroses are not positive and negative aspects of infantile sexual components. G. W. T. H. FLEMING.

Some Aspects of the Psychopathology of Sex Perversions. (*Proc. Roy. Soc. Med., vol. xxvi, p. 1021, June, 1933.*) *Hadfield, J. A.*

The author considers that the sex perversions have the same ætiology and the same mechanism as the other psychoneuroses. The essential factor is the feeling of deprivation of love, which must be interpreted biologically as well as psychologically. The perversions are not the mere persistence of normal infantile tendencies, but are morbid reactions to abnormal situations. These morbid reactions are further repressed, which accounts for the fixation and arrest of sexual development. In all complete perversions there are both exaggeration and repression of the early perverted reactions. Perversions are reminiscences of repressed morbid sensual activities of early childhood. The specific symptom gets its character from the manner in which the child originally reacted to the feeling of deprivation of love. G. W. T. H. FLEMING.

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3. Psychiatry.

Investigations into Memory Disorders [*Recherches sur les troubles de la mémoire*]. (*Ann. Méd. Psych., vol. xiv (ii), pp. 18 and 129, June–July, 1933.*) *Sosset, M.*

Intelligence tests on over a hundred psychotics and imbeciles were carried out. A modification of Vermeylen's psychographic method was used, the essential objective being the relationship of memory to intellect and attention. The writer concludes that memory, attention and intellect are independent faculties with their own curves of evolution and dissolution. He further regards reproduction as the essential memory phenomenon, and it is reproduction, not fixation, which should be tested when this faculty is being estimated. STANLEY M. COLEMAN.

Melancholic and Constitutional Obsessions [*Obsédés mélancoliques et obsédés constitutionnels*]. (*Ann. Méd. Psych., vol. xiv, p. 409, April, 1933.*) *Vurpas, Cl., and Corman, L.*

Obsessional ideas of suicide or homicide frequently develop in the course of a depressive state, and clinically are intimately related to melancholia. An investigation of 27 cases of melancholic obsessions showed the following characteristics:

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(1) A single psychotic episode or a history of similar previous attacks. (2) Depression and anxiety precede and accompany the obsession, which is only a secondary feature of the illness. (3) Often the obsessional state had been preceded by or alternated with a simple melancholia. (4) The conditions under which this morbid state develops are the same as in simple melancholia, *viz.*, family history of manic-depressive psychoses, cyclothymic personality with pyknic physique and predominance of women over men. (5) Realization of the act seldom, if ever, occurs.

The melancholic obsessions must be separated on the one hand from the constitutional obsessions, in which there is evidence of indecision, doubts, scruples and ritualistic behaviour since childhood, and in which there is usually a family history of similar disorders. They occur in schizothymic personality types; the disease is ideational rather than affective, and there is a tendency to chronicity. On the other hand, the obsessional melancholic must be distinguished from the melancholic with fixed idea and true suicidal impulse. The expansiveness, emotionalism and anxiety of the obsessional contrast with the shut-in, retarded, dry-eyed melancholic, in whom it is necessary to apprehend a realization of the act.

STANLEY M. COLEMAN.

Heredity of Patients with Psychasthenia (*Janet, Raymond*). (*Arch. of Neur. and Psychiat., vol. xxix, p.* 1305, *June*, 1933.) *Paskind, H. A.*

The writer found in 800 cases that 76% had a history of a more or less familial neuropathic tendency. In 70·9% this tendency was found in the parents.

G. W. T. H. FLEMING.

Experimental Catatonia with Bulbocapnine [*La catatonie experimentale*]. (*L'Encéph., vol. xxviii, p.* 445, *June*, 1933.) *Fernandes and Ferreira.*

Small doses of bulbocapnine produce cataleptic features in vertebrates, while larger doses produce hypermotility, convulsions and death. The two phases are equally well observed in fish (where there is no neopallium) as in the higher vertebrates. The latter show features very similar to catatonia in man. In the fish, mechanical excitation produces similar effects to the drug, but of less intensity. It is possible that the action of bulbocapnine is to liberate a mechanism subserving the conditioning of the reflex of immobility by inhibiting some centre normally inhibiting the foregoing one. W. McC. HARROWES.

Catatonia in Birds. (*Psychiat. Quart., vol. v, p.* 68, *Jan.*, 1931.) *Henry, G. W.*

The author carried out experiments on birds, injecting from 5%–10% of their body-weight of bulbocapnine. The catatonic symptoms were not so well developed as they had been in higher mammals, showing that birds occupy an intermediate position between the mammal and those animals devoid of a neocortex. The hyperkinetic reaction produced by large doses is not unlike that induced by excessive doses of many other motor excitants. G. W. T. H. FLEMING.

The Interruption of the Catatonic Syndrome. [*Sulla interruzione della sindrome catatonica*]. (*Riv. di Pat. Nerv. e Ment., vol. xl, p.* 241, *July–Aug.*, 1932.) *Gullotta, S.*

The author considers that narcotics of the barbituric acid series are the best for the treatment of catatonia by narcosis. Sodium amytal given intravenously in twelve catatonics was very satisfactory. The interval of freedom from the catatonic state can be used for the psychological examination of the patient, otherwise impossible. The author points out that the action of amytal is sub-cortical, and may consist in restoring the balance between the cerebral cortex and the sub-cortical centres. G. W. T. H. FLEMING.

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Contributions to the Pathological Physiology of Catatonic Stupor [Beiträge zur Kenntnis der Pathophysiologie des katatonen Stupors]. (*Arch. für Psychiat., vol. xcvi, 1933, pp. 319–473.*) *Gjessing, R.*

This records the results of an intensive investigation on 19 cases of catatonic stupor, 10 of which were investigated daily for a total period of 1,193 days. Apart from the specific clinical and pathological examinations, notes were made daily on the mental state of each patient, great care being taken to register the spontaneous beginning and end of a stupor phase, so that correlations with the clinical and humoral changes could be made. Four of the most instructive cases are described in detail.

The examination of each case extended over a period of six months, and comprised daily records of mental state, pulse, temperature, weight, seismographic record of total movement, quantitative determination of nitrogen intake as well as the following urinary constituents: total nitrogen, ammonia, pH, titratable acidity, sulphates, phosphates and sodium chloride. Oxygen consumption, the alkali reserve, blood picture and total nitrogen of plasma were done daily, or at least twice weekly. For short periods also the protein partitions of plasma, glucose tolerance, non-protein nitrogen of blood and total nitrogen of fæces were determined, besides a few water tolerance tests. The following conclusions were arrived at:

The stupor-free phase is characterized by a lowering of basal metabolism, a gain in weight, a tendency to vagotonia and nitrogen retention ("retention syndrome"). At the beginning of stupor a reversal of vegetative function takes place, and sympatheticotonia predominates. The full-blown stuporose phase is characterized by increased basal metabolism, loss of weight, sympatheticotonic tendency and a compensatory increased nitrogen output ("compensation syndrome"). The onset of stupor and the stupor phase itself seem to be determined by abnormal metabolic processes of the stupor-free period. The cessation of stupor appears to be dependent on individual and constitutional factors. Two clinical forms of catatonic stupor are recognized:

(*a*) A syntonic and synchronic reaction type ("SS-type").

In recurring and profound catatonic stupor with an abrupt onset and termination the course of the stupor is particularly regular, and the physico-chemical changes of each phase show marked uniformity. The periodic nitrogen retention reaches the same height in each remission. When this is reached a vegetative reversal occurs, and stupor sets in abruptly. This reaction type seems to be best developed in patients showing a tendency to the pyknic habitus and a cyclic colouring of their psychosis. Dementia is not marked.

(*b*) An asyntonic and asynchronic reaction type ("AA-type").

The onset and termination are by "lysis". The amount of nitrogen retention varies from case to case, and the compensatory nitrogen excretion is usually incomplete. The vegetative phenomena are not so uniform as in the first group. This reaction type is chiefly seen in patients of pronounced asthenic, athletic or dysplastic habitus, whose psychosis terminates in severe dementia.

R. Ström-Olsen.

The Echo of Reading [L'echo de la lecture]. (*L'Encéph., vol. xxviii, p. 169, March, 1933.*) *Morel, F.*

A study of the phenomenon of the echoing of anything read by the patient as if some person at a distance were reading the same passage. Interesting features are the affective component of the condition and the direction from which the hallucination comes. The rôle of this symptom in the passivity group of the schizophrenias is discussed. The author concludes that the condition is really a muscular verbal hallucination rather than a pure auditory hallucination, and that there is more of motor mechanisms in it than introspection, which is interesting in conjunction with the behaviouristic concept of introspection.

W. McC. Harrowes.

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Mescaline Intoxication : A Personal Experience [l'intossicazione mescalinica : Autoesperienze]. (*Riv. Sper. di Fren., vol. lvi, p. 42, March,* 1932.) *Ceroni, L.*

The writer carried out five experiments on himself with mescaline, both by the mouth and hypodermically. He describes his hallucinations as "pseudo-hallucinations". Among the mental phenomena he noted dissociation of the personality and a tendency to automatism, with not a few points of contact with the symptomatology of schizophrenia. G. W. T. H. FLEMING.

The Predisposition to Mental Symptoms in the Chronic Alcoholic [La prédisposition aux accidents mentaux de l'alcoolisme chronique]. (*Ann. Méd. Psych., vol. xiv, p. 300, March,* 1933.) *Mignot, Roger.*

The writer, reviewing a large series of psychotic alcoholics, concludes that other factors, over and above the alcohol, predisposing to mental symptoms are often overlooked. He finds 12% of cases with a history of malaria and 17% with a history of head injury. Regarding the latter, only severe cases with fracture, obvious scarring, memory loss, or a history of a prolonged unconsciousness were included. A number of the traumatic cases admitted that subsequent to the head injury there was diminished tolerance for alcohol. The writer is impressed by the importance of people with old head injuries or who have had malaria abstaining completely from alcohol. STANLEY M. COLEMAN.

The Influenzal Psychoses [Les psychoses grippales]. (*Ann. Méd. Psych., vol. xiv, p. 455, April,* 1933.) *Urechia, C. I.*

Of all acute infectious diseases, influenza is the most likely to precipitate a psychosis (1·5% to 5% according to various authorities). In recent epidemics this complication has occurred in the young, sexes have been about equally affected, and in a large number of cases there had been a hereditary factor. Confusion is by far the commonest syndrome ; impure maniacal and depressive states are not infrequent ; other psychotic manifestations are occasionally met with. Prognosis as to life is much worse if the subject is pregnant or lactating. The onset of psychosis may be in the febrile or post-febrile period. Duration is variable—a few days to twelve months ; chronicity is rare. The paper includes clinical observations on 20 cases. STANLEY M. COLEMAN.

Mental Sequelæ of Acute Encephalopathies [Séquelles mentales d'encéphalopathies aiguës]. (*Ann. Méd. Psych., vol. xiv (i), p. 565, May,* 1933.) *Toulouse, E., and Courtois, A.*

The writers are convinced of the close association between chronic mental illness and preceding cerebral inflammation. In this paper there is a report of a hundred psychotic cases collected during the year 1931. Nineteen of these had a history of convulsions prior to the fourth year, mental symptoms occurring between the thirteenth and twenty-ninth year. Of the remaining 81, twelve had a history of some acute nervous disease (a meningitic state, an acute meningitis or choreal), occurring later than the fourth year. The others had a history of generalized infection, typhoid (34), puerperal fever (19), influenza (6), diphtheria (4), other infections (6), complicated by symptoms indicating cerebro-meningeal involvement. In 90% of the material studied a chronic psychosis with mental enfeeblement as the predominant feature was found ; dementia præcox accounts for 77 of the patients. Out of 80 cerebro-spinal fluids examined, 17 showed modifications.

In the latent period between the acute episode and the mental illness requiring certification, a history of personality changes or intellectual retardation was obtained in the majority of cases. A psychopathic heredity occurred in 26 out of 70 satisfactory investigations. STANLEY M. COLEMAN.

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Tuberculosis and Mental Disease [Tuberculosi e malattie mentali]. (Riv. Sper. di Fren., vol. lvi, p. 392, June, 1932.) Oriani, F.

The writer analysed the clinical records of 1,840 cases of mental disease which died from various causes. He endeavoured to ascertain if there was a relationship between the hebephrenic-catatonic types of dementia præcox and tuberculosis. He found no direct relationship between tuberculosis and mental disease, but in dementia præcox there appeared to be a tendency towards a predisposition to both diseases. G. W. T. H. FLEMING.

Hypophrenia as a Symptom of Juvenile Paresis. (Psychiat. Quart., vol. v, p. 39, Jan., 1931.) Potter, H. W.

The author describes 11 cases of his own with clinical and laboratory findings, and emphasizes the fact that congenital cerebral syphilis always results in mental pathology, which is expressed by various degrees of oligophrenia usually accompanied by emotional instability without any outstanding psychotic symptoms. The so-called "stigmata" of congenital syphilis may or may not be present in cases of congenital neurosyphilis. When the central nervous system is invaded by the syphilitic infection in early childhood, infancy or even *in utero*, the mental symptoms are confined almost exclusively to the field of intelligence, even when the involvement is of a parenchymatous kind. G. W. T. H. FLEMING.

Circumscribed Cerebral Atrophy or Pick's Disease [l'atrofia cerebrale circoscritta o malattia di Pick]. (Riv. di Pat. Nerv. e Ment., vol. xxxix, p. 600, May–June, 1932.) Gullotta, S.

The author, although he does not describe a case of his own, gives a complete description of the theories of Pick's disease and of the histological and clinical picture. He points out that according to Grünthal there is a distinct hereditary element in these cases, and that also according to Onari and Spatz there is a superficial analogy with Marie's hereditary cerebellar ataxia and Huntington's chorea. He points out that when the atrophy of the frontal lobe is extensive there is an atrophy of the corresponding portion of the corpus callosum.

G. W. T. H. FLEMING.

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4. Neurology.

Migraine. (Bull. Neur. Inst. N.Y., vol. ii, p. 429, Nov., 1932.) Riley, H. S.

The writer states that the search for the fundamental causative factors which probably underlie all the manifestations of this disorder is not facilitated by splitting up the malady into a number of types; but, for descriptive purposes, such a classification may be permissible and, indeed, serviceable.

He describes the following types: (1) Hemicrania simplex; (2) ophthalmic migraine; (3) ophthalmoplegic migraine; (4) facioplegic migraine; (5) abdominal migraine; (6) psychic migraine, of which the most common form is the twilight state; (7) psychic equivalents.

In discussing the theories of causation, the writer says that for future investigation the emphasis should be placed upon the hypothesis that a perverted hormone balance is the inciting agent, and the resultant action of the vegetative nervous system, disordered in some way or another, provides the mechanism for the attack. With regard to treatment, the real therapy of the condition must await the solution of the mechanism for the attacks. At the present time therapy is directed toward the relief of what appear to be vascular crises in the attack, and the equalization of a disturbed hormone balance in the interval between seizures.

JOHN D. W. PEARCE.

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Lesions in the Lateral Horns of the Spinal Cord in Acrodynia, Pellagra and Pernicious Anæmia. (*Bull. Neur. Inst. N.Y., vol. i, p. 506, Nov., 1931.*) *Orton, S. T., and Bender, L.*

A case of acrodynia, one of pellagra and five cases of pernicious anæmia are given in outline, with detailed description of the microscopical findings in the spinal cord.

Pathological findings by other authors in similar cases are described and discussed, and the close resemblance clinically between acrodynia and pellagra is noted.

In all the cases reported severe lesions were found in the lateral horns of the lumbar and thoracic levels of the cord and analogous areas of other levels. These lesions are all of a chronic type, characterized by loss of nerve-cells and nerve-fibres and by fibrous glial replacement. Since the lateral horn region contains the cell bodies of the effector neurons, which serve to connect the central nervous system with the peripheral sympathetic network, lesions in this area are held to be in relation to the disturbances of vasomotor and splanchnic control which are common to these three diseases. J. L. FAULL.

The Frequency and Significance of Cerebellar Symptoms in Tumours of the Frontal Lobes. (*Bull. Neur. Inst. N.Y., vol. i, p. 532, Nov., 1931.*) *Hare, C. C.*

The records of 50 patients with frontal lobe tumours verified by operation or autopsy were studied, and the significance of slight and of widespread disturbances of cerebellar function discussed. Forty-five patients had no cerebellar symptoms, and in only two of these were the lesions bilateral. Five patients had marked cerebellar disturbances, and all showed evidence of bilateral involvement of the cerebrum.

A review of the literature shows that there are two main theories to explain the occurrence of cerebellar symptoms in cases of frontal lobe tumours. One is that they are produced by distant pressure on the cerebellum, the other that they are due to involvement of the fronto-ponto-cerebellar pathways (Elsberg). The origin of each pathway is probably from cells in the frontal cortex, and the axons pass backwards fairly close to the mid-line to the pontine nuclei, from which secondary neurons pass to the opposite cerebellar hemisphere and some to the ipsilateral hemisphere. A consideration of all the factors involved leads the author to conclude that cerebellar symptoms in tumours of the frontal lobe are the result of involvement of both fronto-ponto-cerebellar pathways. The cerebellar disturbance may be bilateral, ipsilateral or contralateral to the tumour. The occurrence of these signs is of significance owing to their false localizing value.

J. L. FAULL.

Three Cases of Tumour in the Posterior Cranial Fossa with Mental Symptoms. (*Bull. Neur. Inst. N.Y., vol. ii, p. 104, March, 1932.*) *Southerland, R. W.*

The author gives details of three cases of tumour occurring in the posterior cranial fossa, in which changes of character and psychotic manifestations were marked. One was a female suffering from perineural fibroblastoma of the acoustic nerve. This patient's first symptom occurred at night, when she awoke with a visual hallucination "like lightning". She showed signs suggestive of the lesion above mentioned, but the mental symptoms were very prominent. She was loquacious, facetious, and would dance round the ward weeping; memory was impaired and concentration poor. Ventriculography cleared up the diagnosis from that of a bilateral frontal lobe lesion involving the fronto-ponto-cerebellar tract. Another case was a male with a cystic glioma of the left cerebellar lobe. Here again, owing to the mixture of cerebellar signs with mental symptoms, such as extreme dullness and confusion, the diagnosis from a bilateral frontal lesion was difficult. This patient was operated on successfully, and later developed delusions and became hallucinated, with ultimate recovery. The third case was a

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male, suffering from a medullo-blastoma in the right cerebellar hemisphere. Here the mental state was one of extreme drowsiness, so that the question of encephalitis was raised. The cerebellar signs were definite, however, and a ventriculogram cleared up the diagnosis. The author then proceeds to discuss the reason for the occurrence of mental symptoms in subtentorial tumours, and considers a rapid rise of intracranial pressure or secondary vascular changes, such as œdema, may be the explanation. He stresses the importance of careful history-taking and appreciation of the sequence of symptoms, tests of vestibular function and ventriculography in the differential diagnoses of these cases.

J. L. FAULL.

Contribution to the Study of Neurinomata: with Particular Regard to Their Association with Acromegaly and Their Malignancy [Contributo allo studio dei neurinomi con particolare reguardo all 'associazione con acromegalia ed alla loro trasformazione maligna]. (Riv. di Pat. Nerv. e Ment., vol. xxxix, p. 521, May–June, 1932.) Fittipaldi, C.

The author reviews the literature and then describes two cases of his own, one of which corresponded to the classical picture described by Verocay; the other was accompanied by acromegaly and was malignant clinically and histologically. The acromegaly was due to the presence of a blastoma round the hypophysis of the same type as the neurinoma in the right arm.

G. W. T. H. FLEMING.

Malignant Tumours of the Hypophysis Invading the Diencephalon. (Journ. of Nerv. and Ment. Dis., vol. lxxvii, p. 561, June, 1933.) Fink, E. B.

The author reports four cases of malignant tumours of the hypophysis. In each case there was invasion of the third ventricle. He would divide these tumours into adeno-carcinomata, composed of epithelial elements of the anterior lobe, and cranio-pharyngeal epitheliomata, composed of embryonal elements derived from Rathke's pouch. The latter type is the more common, and probably all solid tumours of this type are potentially malignant because of their tendency to invade the diencephalon.

Clinical criteria, by which malignancy may be diagnosed, are early and rapidly progressing damage to vision, together with evidence of involvement of the diencephalon. Signs of increased intracranial pressure are late in appearing.

G. W. T. H. FLEMING.

Tuberose Sclerosis with Cirrhosis of the Liver [Sclerosi tuberosa cerebro-spinale con cirrosi epatica]. (Riv. Sper. di Freniat., vol. lvi, p. 699, Dec., 1932.) Tedeschi, C.

The writer describes a case of tuberose sclerosis in a child of six, in which there was also atrophy of the thymus, of the thyroid and of the suprarenal medulla, together with cirrhosis of the liver. He was able to exclude the usual causes of hepatic cirrhosis, and thinks that the condition is probably allied to Wilson's disease and the pseudo-sclerosis of Westphal. G. W. T. H. FLEMING.

Modern Conception of Convulsive States [Concezione moderna della stato convulsivo]. (Riv. di Pat. Nerv. e Ment., vol. xl, p. 362, Sept.–Oct., 1932.) Osnato, M.

The writer points out that many factors are involved; one of these factors is some unknown substance which makes the brain-tissue irritable. Injury at birth or shortly after, and infections in childhood, may establish epileptogenous areas. The convulsive seizure is brought about by alteration of the permeability of the cerebral blood-vessels.

If the initial factor is not an infectious or traumatic one, then metabolic disturbances, amongst which is an excessive production of lactic acid, may give

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rise to convulsions. It seems necessary to assume the existence of some convulsing substance, which the writer thinks may be of the nature of a polypeptide or other product from the path of protein metabolism, with a chemical structure resembling absinthe. This gives rise to a temporary occlusion of the blood-vessels. The repetition of this vascular spasm gives rise to the cellular changes described by Spielmeyer. Increased intracranial pressure, emotional or asphyxial states as far as they act mechanically or biochemically on the permeability of the blood-vessels or act indirectly through influencing the autonomic nervous system are important, but by themselves are insufficient to produce convulsions. The intervention of a convulsive agent is absolutely essential, but the nature of this agent is yet to be determined. G. W. T. H. FLEMING.

Epileptic Fits in Relation to Cosmic and Geophysical Phenomena [*Le Crisi epilettiche in rapporto ai fenomeni naturali cosmici e geofisici*]. (*Arch. gen. di Neur. psichiat. e psicoan., vol. xiii, p. 21, April*, 1932.) *Fresa, A.*

The author puts forward the theory that the moon has a definite effect on the motor attacks, and that the sun has an effect on the equivalents.

G. W. T. H. FLEMING.

Neurofibromatosis or Primary Recklinghausen's Disease [*Neurofibromatose ou primeira molestia de Recklinghausen*]. (*Ann. Paulista de Med. e Cirug., vol. xxv, p. 501, June*, 1933.) *Ribeiro, E. B.*

As we have two distinct morbid entities, each of which is named "Recklinghausen's disease", it is proposed to apply the term "primary Recklinghausen's disease" to the neurofibromatosis studied by that author in 1882, and the term "secondary Recklinghausen's disease" to that which was identified in 1891, and which is already known under the names of "osteitis fibrocystica", "osteitis fibrosa", "juvenile osteodystrophy" and other titles. Great attention should be paid to the presence of anæsthesia, total or partial, at the level of the tumours. The histological studies of Takino explain this anæsthesia, and make clear the pathogenesis of the lesions; and these studies, consequently, deserve wider publicity. We should connect the symptoms or lesions of primary Recklinghausen's disease with symmetrical multiple lipomatosis.

M. HAMBLIN SMITH.

Apraxia [*Sur l'apraxie pure constructive*]. (*L'Encéph., vol. xxviii, p. 413, June*, 1933.) *L'Hermitte, J., and Trelles, J. O.*

In the introduction previous workers are quoted, and the confusion between the different types of apraxia is discussed. The part played by space-perception in apraxia is fully discussed. It is suggested that in some cases apraxia was due to interruption of the connection between certain space conceptions and the appropriate movements; cases are quoted in support of this. Poppelreuter is quoted as stating that the condition is one of disharmony between visual and psychomotor activity. The authors suggest that the important feature in the syndrome with which they deal is the disturbance of the self-representation of the patient's own body. This is the "Körperschema" of Schilder, and some space is given to the discussion of this, the theory being that all space-perceptive mechanisms depend on the integrity of the "Körperschema" for their functioning. This is linked up with the autotopagnosia of Pick, and it is said that an "asomatognosia" is the actual basis of the agnostic features which are present in the constructive apraxia. Schilder says "apraxia may be due to failure of transfer of space conception to manual movement" (an interesting contribution to the question of "meaning").

The site of the lesion is then discussed; narrowly localizing theories are deprecated. At the same time attention is drawn to the parietal region and especially

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to the supramarginal and angular gyri, where the examination of the brains of the subjects revealed an abiotrophic change and a quantitative and qualitative loss. Mention is then made of the "sensory visual band" of Elliot-Smith, and its significance as a connecting link between parietal and occipital mechanisms is mentioned. The authors suggest that it is a disturbance of this group of cerebral areas that leads to a loss of personal bodily orientation, in the absence of which external space cannot be adequately managed by the subject.

W. Mc. HARROWES.

Clinical Observations on the Value of the Hoffmann Sign. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, p.* 594, *June,* 1933.) *Fay, T., and Gotten, H. B.*

This sign consists in flexion of the fingers and thumb on snapping the tip of the nail of the middle or index finger. The authors consider it to be a delicate reflex phenomenon associated with organic diseases of the nervous system situated above the mid-cervical region. They consider it compares favourably with the Babinski reflex as a reliable index of organic disease in the cortical spinal pathways. It may appear at times without a Babinski sign when the lesion is focal to the fibres or areas concerned in motor functions of the upper extremities.

G. W. T. H. FLEMING.

Postural Reflexes in Various Diseases of the Central Nervous System, Particularly Catatonic Dementia Præcox [*Sui riflessi di postura locale e generale in varie malattie del sistema nervosa centrale, nella demenza precoce catatonica in ispecie*]. (*Riv. Sper. di Freniat., vol. lvi, p.* 131, *March,* 1932.) *Severino, A.*

The writer investigated the postural reflexes in 50 cases of dementia præcox, of which 20 were catatonics, in 34 cases of severe disease of the nervous system and in 24 functional cases. The general reflexes were found well preserved in dementia præcox and without any exaggeration in catatonics. In 60% of the catatonics there was an exaggeration of the local reflexes. In the non-catatonic cases of dementia præcox this percentage was less than 20. This deviation from the normal the writer considers is due to some toxic or organic change in the nervous system, and he assumes that there is some lesion of the extrapyramidal centres.

G. W. T. H. FLEMING.

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5. Oligophrenia (Mental Deficiency).

Some Clinical Neuro-psychiatric Conditions with Mental Defect [*Di alcune forme cliniche neuro-psichiatriche con deficit mentale*]. (*Riv. Sper. di Freniat., vol. lvi, p.* 1, *March,* 1932.) *de Sanctis, S.*

The writer distinguishes three types: A with cortical and pyramidal symptoms predominating, B with striate and extra-pyramidal symptoms most marked, and C with a mixed symptomatology, cortical and basal. All three showed marked defect of personality, while the intellectual defect varied in degree.

G. W. T. H. FLEMING.

A Contribution to the Study of Mongolism [*Contributo allo studio del mongolism*]. (*Riv. Sper. di Freniat., vol. lvi, p.* 162, *March,* 1932.) *Delfini, C.*

The writer describes a case of mongolian idiocy. At the autopsy there was a striking agenesis of the cerebral cortex. The histological examination showed an arrest of development in a primitive stage. In the left lateral ventricle there was a cyst the size of a hazel-nut. There was a marked alteration in the whole endocrine system, which the writer considers must have taken place *in utero*. He believes that the cause lies in an agenesis of the suprarenal medulla, and to a want of development of the thyroid parenchyma.

G. W. T. H. FLEMING.

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The Wassermann Test in the Feeble-minded. (*Psychiat. Quart., vol. v, p.* 45, *Jan.*, 1931.) *Bronfenbrenner, A. N.*

Amongst a group of 2,463 institutionalized oligophrenics, the writer found 2·7% with a strong positive and 2·8% with a weak positive Wassermann, making a total of 5·5%. In a group of 11,205 orphans the rate of strong positives was 1·1%. The percentages in the three groups of idiots, imbeciles and morons were 6·8, 4·8 and 5·5. The age-gradient (*i.e.*, the tendency of the Wassermann in congenital syphilis to become negative with advancing age) shows its influence when we examine the figures for the weak positives in the three groups, *i.e.*, 4·3%, 3·3% and 2·6%, the idiot group having the lowest average age.

The writer considers that statistics on the positive Wassermann do not adequately reflect syphilogenic processes, and therefore cannot be used by themselves for the evaluation of syphilis as a factor in the ætiology of oligophrenia.

G. W. T. H. Fleming.

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6. Criminology.

The Psychopathology of Incendiaries [*Zur Psychopathologie der Brandstifter*]. (*Zeitschr. f. d. ges. Neur. u. Psychiat., vol. cxliv*, 1933, *p.* 148.) *Fischer, O.*

The author divides pathological incendiarism into three groups:

(1) In psychoses, where, as a result of delusions or hallucinations, the patient is prompted to set fire to property. Schizophrenia and general paresis provide the largest proportion of this group.

(2) The greatest number of incendiaries are mental defectives, and the motive in such cases is often extremely childish. The act is frequently committed from desire for vengeance, or as a naïve attempt to eliminate unpleasant experiences in connection with any particular place.

(3) The third group is made up of such cases as are difficult to assess, both from the psychiatric and forensic point of view. In many cases the pleasure derived from watching the fire is connected with some form of sexuality, and in support of this the writer submits that the crime is frequently committed by girls at the age of puberty, especially at the menstrual period, and that male incendiaries are mostly between twenty-five and thirty years of age. The case of a man, æt. 21, is described in detail, showing how the sight of the fire produced intense sexual irritation, which culminated in an orgasm. Hitherto the connection between incendiarism and sexuality has not been clearly demonstrated. R. Ström-Olsen.

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7. Treatment.

Forced Drainage in the Treatment of Poliomyelitis. (*Bull. Neur. Inst. N.Y., vol. i, p.* 419, *Nov.*, 1931.) *Retan, G. M., and Kubie, L. S.*

Report of a case of poliomyelitis successfully treated during the pre-paralytic stage by "forced drainage". The child, a female, æt. 9, was submitted to prolonged drainage (36 hours) of the cerebro-spinal fluid through a lumbar-puncture needle. At the same time the production of cerebro-spinal fluid was stimulated by lowering the osmotic pressure of the blood by administering water by mouth and hypotonic saline (0·45%) by intravenous injection. An account of experimental work supporting the theory underlying the method of treatment is given, and also a critique of the results of treatment by serum from convalescent patients.

J. L. Faull.

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On Avertin-amylene-hydrate and Avertin as Hypnotics in the Psychoses [Über Schlafversuche mit Avertin-amylenhydrat und Avertin bei psychosen]. (*Zeitschr. f. d. ges. Neur. u. Psychiat., vol. cxliv*, 1933, *p.* 617.) *Izikowitz, S.*

The paper is based on experiences gained from 600 "narcoses" on 106 patients at the Caroline Psychiatric Institute, Stockholm. Avertin-amylene-hydrate is a solution of avertin in amylene hydrate, and contains 1 grm. avertin and 0·6 grm. amylene hydrate per c.c. Both it and avertin are given *per rectum* in a 2½% aqueous solution in doses of ·125 grm. per kgrm. body-weight. The drugs were employed as sedatives or hypnotics in patients showing great restlessness and psychomotor agitation, but in 17 cases they were also used for prolonged narcosis (five to six days). As a sedative and hypnotic, avertin-amylene-hydrate is unsurpassed in procuring a rapid sleep, which, at the same time, has the advantage of being of long duration. It is specially indicated in states of excitement where a rapid action is desired. In 5 cases paretic seizures were promptly cut short. Toxic symptoms were infrequent, the most important being cyanosis, shallow breathing, fall of blood-pressure, nausea, vomiting and enteritis. In 15 cases the blood-sugar was investigated during narcosis. Within the first half to one hour there was a rise of blood-sugar, followed by a fairly rapid fall within three hours to values below that of the fasting level. The value and efficacy of avertin-amylene hydrate in prolonged narcosis appears to be distinctly below that of somnifaine, but the material is too small to allow of any general conclusion.

R. Ström-Olsen.

The Modification of the Pneumogram Following on the Intravenous Injection of 2 c.c. of Somnifaine [Modificazioni del pneumogramma in seguito all' iniezione endovenosa di 2 c.c. di Somnifen]. (*Riv. di Pat. Nerv. e Ment., vol. xl, p.* 471, *Sept.–Oct.*, 1932.) *Curti, G.*

The writer found that somnifen in intravenous injections of 2 c.c. gave rise to decrease in the depth and number of respirations, to periodic respiration, to slight oscillations in the tone of respiratory muscle and a fleeting increase with slackening of the second half of inspiration, or the modification of respiration already described by Gullotta and Buscaino in dementia præcox and in the syndrome following on the administration of bulbocapnine.

G. W. T. H. Fleming.

Sulphur Therapy in Mental Patients [La sulforpiretoterapia nelle malattie mentali]. (*Rasseg. di Studi Psich., vol. xxii, p.* 77, *Jan.–Feb.*, 1933.) *Ceroni, L.*

The author treated 50 mental patients by means of intramuscular injections of sulphur in oil. The first injection was 2·5 c.c., the second 5 c.c., the third 7·5 c.c., and the rest (up to 12 injections) 10 c.c. He found in a considerable proportion of the cases an improvement in behaviour and habits. The manic-depressive group yielded the best results, some cases being discharged that had previously been given up as hopeless. There were few complications. The highest temperature recorded was 104·7° F.

G. W. T. H. Fleming.

Psychiatric Aspects of Occupational Therapy. (*Occupat. Ther. and Rehabil., vol. xii, p.* 171, *June*, 1933.) *Bullard, D. M.*

The value of occupational therapy in aiding the mentally maladjusted depends on various factors, and an important one is the personal relationship between the patient and the therapist. The latter will be better able to help the patient if he has some knowledge of personality types, and of different methods of establishing contact with the different types. It is thus noted that introverts are hard to persuade, while extroverts are easy to persuade. Schizophrenics form a large part of the mental hospital population, and it is found that they tend to work intently and with precision, but to make articles of little value to the shop. Hebephrenics can only be interested in the simplest of tasks; catatonics are usually

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inaccessible, while paranoids can be got to work if sympathy is shown with their delusions. Extroverts need tasks that are soon completed, and introverts need much encouragement. Recovering confused and stuporose patients take well to the shop, as they desire to get back to facts. F. H. HEALEY.

One- and Many-Response Activity in Mental Re-education. (*Occupat. Ther. and Rehabil., vol. xii, p. 159, June, 1933.*) *Davis, J. E.*

The modern emphasis in therapeutic treatment is placed on activity. In this paper are discussed simple and complex activities which can be utilized in the treatment of psychotics. Exercises and games are classified into one-response and many-response activity, and the types of patients for each activity are carefully selected. In training and occupying patients, it is found that the order of progression in the regressed types is from one- to many-response activity, whereas in hyperactive extroverts the reverse procedure is more suitable. It is noted that the dementia præcox patient shows a high degree of proficiency in one-response activity, and a low degree of proficiency in inter-related movements and activities. F. H. HEALEY.

Professional Library Service is Possible in Your Hospital. (*Occupat. Ther. and Rehabil., vol. xii, p. 183, June, 1933.*) *Reed, E. W.*

There are two systems of arranging for a supply of books to a hospital, the unit system and the group system. In the former the library is owned and operated by the hospital, while in the latter several hospitals make an arrangement with a public library. The success of a library depends to a large extent on the librarian, who should have a wide knowledge of books and of human nature. He should be accepted as a full member of the hospital staff. Examples are given of library arrangements for hospitals in America, and particulars of the cost incurred. A new term is coined, " bibliotherapy ", which means fitting the book to the patient. Hospital library service has achieved recognition, and the hope is expressed that it will soon be an essential service in every hospital. F. H. HEALEY.

A Re-orientation in Psychotherapy. (*Psychol. Clinic, vol. xxi, p. 253, 1933.*) *Tendler, A. D.*

The concept of tension provocation and tension reduction is basic. Tension is a psycho-biological interaction, involving many factors. A system of tensors and detensors is built up within the individual. Efforts at readjustment may occur normally. The psychologist aims at doing more effectively what naturally goes on. He seeks to induce a hopeful attitude and effort on the part of the patient. Analysis of the dynamic factors in readjustment is essential. Failure to advance in this direction merely relegates the psychologist to the level of a laboratory assistant. M. HAMBLIN SMITH.

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8. Pathology and Biochemistry.

The Significance of the Microglia in the Formation of Senile Plaques [*Die Bedeutung der Mikroglia für die Entstehung der senilen Plaques*]. (*Zeitschr. f. d. ges. Neur. u. Psychiat., vol. cxliv, 1933, p. 216.*) *Winkler-Junius, E.*

The formation of senile plaques starts as a growth of oligodendroglia cells; their processes entangle the neighbouring nerve-cells, and to some extent also the blood-vessels and macroglia cells, forming a network around these tissue elements. This network is the foundation of a plaque. Hortega cells combine with these young plaques and penetrate the network. By absorption of the breakdown products of degenerated nerve-cells, the microglial processes swell up and form the nucleus of a plaque, around which the original network disappears. New processes may grow through the plaque and absorb the remaining cellular

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elements. Finally, amyloid is deposited in the Hortega cell. The amyloid is confined to the nucleus of the plaque, and after treatment with carbon silver, assumes a radiating appearance. The oligodendroglia network disappears according to the degree of absorption by the microglia of degeneration products. The periphery of the plaque is composed of remnants of this network.

R. Ström-Olsen.

The Rapid Demonstration of Senile Plaques [Méthode de démonstration rapide des plaques séniles]. (Riv. di Pat. Nerv. e Ment., vol. xl, p. 489, Sept.–Oct., 1932.) Divry, P.

The author's method of staining to show senile plaques has been found by him to be simple, effective, and productive of quick histological diagnosis. Formalin-fixed material is used, frozen sections of 20 microns are cut and the sections placed in distilled water. Each section is then put into a small porcelain dish containing the following solution: Hortega's solution, 5 gr.; distilled water, 5 gr.; pyridene, 10 drops. The solution is warmed until it steams, moving the section about. The section becomes brownish. The section is then passed on a glass lifter into a 10% solution of formalin, then rapidly passed through distilled water and mounted in gelatine-glycerin. The reduction in formalin is very rapid indeed.

G. W. T. H. Fleming.

The Occurrence of Calcification in Gliomas. (Bull. Neur. Inst. N.Y., vol. i, p. 314, June, 1931.) Masson, C. B.

A report on 131 gliomas verified by operation or autopsy in the surgical division of the New York Neurological Institute. In 17 of these cases, X-ray films of the skull gave more or less evidence of calcification in the tumour. An attempt was made to determine the frequency of occurrence of such calcification in the different types of glioma, and to discover whether it was possible to diagnose from the X-ray appearances whether a given glioma was undifferentiated or well-differentiated.

A table is given showing frequency of calcification visible in X-ray examination in these 131 tumours, subdivided into the various types of glioma. There is then a brief review of the literature on the subject.

It is seldom possible to differentiate between the various types of glioma by means of X-ray appearances alone. Nor can one distinguish with certainty between lime-salt deposits occurring in an area of degenerated brain-tissue secondary to vascular changes in an old abscess and in a glioma respectively.

The surgeon is considerably helped in localization and in planning his approach by a good stereoscopic X-ray film of a calcified tumour.

J. L. Faull.

Studies of Pathogenesis of Multiple Sclerosis. Part II: Evidence of an Abnormal Lipase in the Blood in Multiple Sclerosis. (Bull. Neur. Inst. N.Y., vol. i, p. 105, Jan., 1931.) Brickner, R. M.

This paper reports the continuation of a research, Part I of which was published in the *Arch. Neur. and Psychiat.*, vol. xxiii, p. 715, 1930.

The author presents the results of investigations carried out on the blood of 51 persons suffering from multiple sclerosis and 79 normal controls. The action of serum and plasma in the production of titratable acidity, both in the presence and the absence of lecithin, is the basis of a claim that in the blood of cases of multiple sclerosis there occurs an abnormal lipase, which differs in certain specific properties from that found in normal blood.

J. L. Faull.

Studies in the Pathogenesis of Multiple Sclerosis. Part III: Further Evidence of Abnormal Lipolytic Activity in the Blood in Multiple Sclerosis. (Bull. Neur. Inst. N.Y., vol. ii, p. 119, March, 1932.) Brickner, R. M.

This paper is a continuation of the author's studies on the presence of an abnormal lipolytic agent in the blood in cases of multiple sclerosis. The method

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used was to study and compare the action of the blood-serum on various esters in series. This method was devised by Falk, and has been utilized by him for nearly twenty years for testing differences in properties between lipases. A full account of the technique is given. As a result of his experiments, the author claims that a difference exists between the results obtained with the multiple sclerosis sera and those obtained with the control sera from healthy and other persons. There follows a discussion on the work of Crandall and Cherry, who have investigated the lipolytic activity of multiple sclerosis blood, using olive oil as a substrate; and also on that of Weil and Cleveland on demyelinization of the rat's spinal cord by multiple sclerosis serum. J. L. FAULL.

The Value of Brain Lipoids as an Index of Brain Development. (*Bull. Neur. Inst. N.Y., vol. i, p. 28, Jan.*, 1931.) *Tilney, F., and Rosett, J.*

The authors have made quantitative estimations of the lipoid content of 68 human brains from subjects of all ages. As a result of their investigations they find that from birth there is a gradual increase in the amount of lipoid in the brain, and this increase, proportionately, is most marked during the second year of life. The lipoid content increases during life, to reach its maximum in the sixth decade, and associated with this increase there is a decrease of water content, although this is not absolutely equal. From the sixth decade there is a slow loss of lipoid with increase of water. Different cerebral localities have different lipoid contents. General systemic diseases and intrinsic disease of the central nervous system have an influence on the lipoid content of the brain. Acute infections, metabolic and nutritional disorders decrease the amount of lipoid; the more gradual reaction to malignant neoplasms, cardio-vascular disease and blood diseases tends to increase lipoids. Neuro-syphilis seemed not to affect the lipoid content. The brains of two mental defectives, one an imbecile, the other an idiot, show a high percentage of lipoids. Various macro- and micro-methods of extraction and estimation of brain lipoids are described and discussed. The authors stress the importance of these substances in the development and functional activity of the brain, and consider their quantitative estimation to be a valuable guide to the degree of cerebral development.

A suggestion is offered for a unified, systematic procedure in the investigation of the brain, especially in individuals distinguished for their intellectual attainments. J. L. FAULL.

A Contribution to our Knowledge of the Toxic Action of Carbon Bisulphide on the Nervous System of Some Experimental Animals [*Contributo alla conoscenza dell' azione tossica del solfuro di carbonio sul sistema nervosa di alcuni animali da esperimento*]. (*Rass. di Studi psichiat., vol. xxii, p. 206, March–April*, 1933.) *Trossarelli, A.*

As a result of the known toxic action of carbon bisulphide on some workers in the preparation of artificial teeth, the author carried out experiments on guinea-pigs. He found that the action of carbon bisulphide, combined with cold, produced in the nerve-cells alterations, which consisted of an agglomeration of the fibrillar endocellular network. This was not produced by the action of carbon bisulphide alone. The symptoms shown by the experimental animals were paralysis, tremors, muscular contractures and asthenia. G. W. T. H. FLEMING.

The Psychological Effects of Oxygen Deprivation (*Anoxæmia*) *on Human Behaviour.* (*Arch. of Psychol., No. 145, Dec.*, 1932.) *Mcfarland, R. A.*

A number of experiments were carried out with varying percentages of oxygen, corresponding to heights up to 28,000 ft.

Simple sensory and motor responses were not seriously impaired until the subject approached collapse from oxygen want. Kinæsthesias and vision were apparently the first sense categories to be affected and audition the last. The average subject's

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simple reaction time was not affected until a height of 24,000 ft. was reached. In some cases there was a short period of stimulation about 20,000 ft. Choice reactions begin to be impaired at about 17,000 ft.

Impairment of neuro-muscular control is affected before the loss of capacity in more highly organized functions (such as the choice reaction test). Under acute oxygen want loss of motor control is very great, accompanied by frequent tremors, muscular twitches, unwitting rhythmical movements and loss of kinæsthetic sensibility. Loss of memory occurred when a height of 23,500 ft. was reached, and from there on was proportional to the extent of the deprivation. The awareness of the lapse of time is apparently lost also. Low oxygen tension handicaps voluntary co-ordination, control or effort. Considerable application of energy is required to overcome the initial drowsiness and lethargy.

There were frequent " attention peaks " associated with either loss of energy or loss of attentive capacity. Higher mental processes were impaired with the loss of memory and attention, and yet awareness of what is going on persists until the very end. Irritational or fixed ideas were frequent, and capacity for sane judgment and self-criticism were lost. The subject was frequently unaware of his altered behaviour, and insisted on continuing in spite of obvious dangers. When the deprivation of oxygen is severe, *i.e.*, above 24,000 ft., unusual emotional outbursts or removal of inhibitions frequently occurred, involving loss of æsthetic and moral habits, much as in alcoholism. The subject may have hysterical laughing, or be very angry, and try to demolish the apparatus. Under severe oxygen want, neurotic and emotional tendencies may be unmasked. The behaviour under oxygen want correlated highly with behaviour under alcohol. The author suggests that oxygen want is a prominent symptom in neurasthenia, and considers that personality is in the final analysis dependent on physio-chemical processes.

G. W. T. H. Fleming.

The Influence of Water Supply on Bodily Growth and on the Development of Goitre and of Thyroid Dysfunction [Influenza dell' alimentazione idrica sull' accrescimento corporeo e sulla genesi del gozzo e delle disfunctioni tiroidee]. (*Riv. di Pat. Nerv. e Ment., vol. xl, p.* 346, *Sept.–Oct.*, 1932.) *Collella, R.*

The author investigated 512 cases of typical and atypical exophthalmic goitre. He found that there was a definite relation between the consumption of certain waters and enlargements of the thyroid and disturbance of thyroid function. The use of these waters from birth in certain animals (cats, dogs, etc.) produced goitre. Apart from the enlargement of the thyroid, there was a disturbance of the entire organism, a slowing of growth associated with precocious somatic and mental development. Amongst human beings, particularly in women, the use of these waters often produced swelling of the thyroid. The author considers goitre and Basedow's disease to be extremes of the same condition, with many intermediate degrees. These researches seem to show that a specific organism forms a specific toxin, which is swallowed in the water and affects the thyroid gland. Histological examination of the thyroid glands of the animals used for these experiments showed that the colloid was increased in amount, more fluid, less stainable and sometimes granular. In addition there was a hypertrophy and proliferation of the acinar cells which tended to become cylindrical. In the dog there was an increase of connective tissue. In the goitre found in cats there were areas of cells resembling thymus tissue. There were no changes in any of the other glands of internal secretion.

G. W. T. H. Fleming.

Changes in the Capillaries in Psychopathic Children and Young People Treated with an Iodothyroidin Preparation [Modificazioni dei capillari in fanciulli e giovani psicopatici trattati con un preparato jodo-tiroidinico]. (*Rass. di Studi psichiat., vol. xxii, p.* 3, *Jan.–Feb.*, 1933.) *Pighini, G., and Delfini, C.*

The authors examined by means of a capillariscope 25 subjects (19 male and 6 female), of whom 12 were imbeciles or idiots, 5 were epileptics, 3 were post-

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encephalitics, 3 were cretins or cases of myxœdema and 2 were mongols. They found that under the influence of iodothyroidin therapy a previously hypoplastic and ill-defined capillary bed became much better developed. This change took place after some four to five months. G. W. T. H. FLEMING.

Basal Metabolism in General Paralysis [Il metabolismo basale nella paralisi progressiva]. *Riv. di Pat. Nerv. e Ment., vol. xxxix, p. 623, May–June, 1932.)* *Noto, G. G.*

The author investigated the basal metabolism in 20 cases of general paralysis. Notwithstanding various amounts of treatment that the cases had received, the basal metabolism was found to be increased by as much as 43·7% in some cases; in 80% of the cases the increase was more than 10%. The author summarizes recent work on the respiratory quotient, protein metabolism, blood-cholesterol, etc., and points out that all the evidence goes to support the view that in general paralysis there is a definite disturbance of the central vegetative mechanisms.
G. W. T. H. FLEMING.

The Surface Tension of Urine in Mental Disorder [Über Veränderungen der Oberflächenaktivität des Harnes dei Geisteskranken]. *(Zeitschr. f. d. ges. Neur. u. Psychiat., vol. cxliv, 1933, p. 96.)* *Kraulis, W.*

The urines of 260 psychotics were examined with the stalagmometer of Traube. A lowering of surface tension occurred in manic-depressives in all phases. A similar finding was the rule in most excited and depressed schizophrenics and psychopaths. In organic psychoses, epilepsy, catatonic stupor and chronic demented schizophrenics no characteristic deviations from normal occurred. The author suggests that the method may be used as a means of diagnosis between benign and catatonic stupors. R. STRÖM-OLSEN.

Variations of the Leucocytic Formula in the Psychoses [Les variations de la formule leucocytaire dans les maladies mentales]. *(Ann. Méd. Psych., vol. xix, p. 121, Feb., 1933.)* *Tinel, J.*

Specific variations in the leucocytic formula occur after administering drugs recognized as stimulators or inhibitors of the sympathetic system. The former produce leucocytosis, with predominance of the polynuclear neutrophils. There is also a slight increase of small lymphocytes, while the large and medium mononuclears are diminished. In the latter group there is a leucopenia with rarefaction of polynuclears and small lymphocytes. Large and medium mononuclears are increased.

In all examinations care was taken to exclude sources of error resulting from anxiety, peripheral vaso-constriction, digestive activity, medication, alcohol and tobacco.

In the insane, variations were found corresponding to syndromes of hyper- or hypoboulia. In overactive states, whether due to mania, schizophrenia, general paralysis or toxæmia, there was a formula corresponding to that of the stimulators of the sympathetic. In states of under-activity, whatever the underlying psychosis, there was the reverse leucocytic formula, leucopenia with rarefaction of neutrophils, etc. Eosinophilia was found to be indicative of a toxic agent.

The writer concludes that variations of the leucocytic formula depend upon stimulation or inhibition of the sympathetic system. The inference is made that the sympathetic exerts a controlling action on the blood-forming centres. The formula bears no direct relation to the psychoses. Syndromes of hyper- or hypoboulia are associated with varying degrees of activity of the sympathetic, resulting in a corresponding leucocytic formula. S. M. COLEMAN.

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The Glyoxalase Activity of the Red Blood-Cell: The Function of Glutathione. (*Biochem. Journ., vol. xxvii, p. 486, No. 2, 1933.*) *Jowett, M., and Quastel, J. H.*

The presence of reduced glutathione is necessary for the activity of glyoxalase in red cells. Human red cells show a high glyoxalase activity, which disappears almost entirely on lysis of the cells with distilled water, but can be restored by the addition of glutathione at concentrations of the same order as that present in the intact cell. Methylglyoxal and glutathione combine reversibly. The glyoxalase activity of the red cell under varying conditions is an indicator of the concentration of reduced glutathione in the cell. Oxygen diminishes the glyoxalase activity of both intact and lysed red cells. The inhibitory effect of oxygen on the glyoxalase activity of the red cells is decreased by glucose; the behaviour of the lysed blood-cell is unaffected by glucose. G. W. T. H. Fleming.

Chemical Studies in the Epileptic Syndrome. (*Journ. of Nerv. and Ment. Dis., vol. lxxvii, p. 601, June, 1933.*) *Hopkins, H.*

The author found the average whole blood cholesterol slightly lower in a group of epileptic patients than in a corresponding normal group. The range of variation in whole blood cholesterol from hour to hour throughout 24 hour-periods was greater in epileptic patients than in normal individuals.

G. W. T. H. Fleming.

A Comparative Research on the Chlorides in the Serum in some Nervous and Mental Diseases [*Ricerche comparative dei cloruri del siero di sangue in alcune malattie nervose e mentali*]. (*Riv. Sper. di Freniat., vol. lvi, p. 744, Dec., 1932.*) *Mazza, A.*

The author found that the serum chloride is increased above the normal in epileptics, giving a value of 6·1% compared with a normal value of about 5·8. The other mental diseases, including post-encephalitic cases, gave normal values.

G. W. T. H. Fleming.

The Influence of Muscular Contraction on the Behaviour of Soluble Phosphorus and of Glucose in the Blood of Dogs Subjected to Muscular Activity Caused by Stimulation of the Sensori-motor Centres and by Peripheral Stimulation [*Influenza della contrazione muscolare sul comportamento del fosforo solubile e del glicosio del sangue nei cani sottoposti a lavoro muscolare mediante stimolazione dei centri sensitivo-motori e stimolazione periferiche*]. (*Riv. Sper. di Freniat., vol. xli, p. 627, Sept., 1932.*) *Longo, V., and Napoli, G.*

The authors experimented on 18 dogs. In dogs predisposed to reflex epilepsy and submitted to faradic stimulation of nerves there was, after the fit, a considerable decrease in the inorganic phosphorus and in the total phosphorus and a marked increase in the glucose. In dogs not so predisposed there was a considerable increase in the phosphorus while the glucose behaved irregularly. The authors conclude that there is an intimate relation between the metabolism of phosphorus and of carbohydrates. G. W. T. H. Fleming.

Soluble Phosphorus in the Cerebro-spinal Fluid in some Nervous and Mental Diseases [*Ricerche sul fosforo solubile del liquido cerebro-spinale in alcune malattie nervose e mentali*]. (*Riv. Sper. di Freniat., vol. lvi, p. 623, Sept., 1932.*) *Longo, V.*

The writer examined the cerebro-spinal fluid of 53 individuals affected with various conditions, 15 general paralytics, 10 cerebral syphilitics, 10 catatonics, 10 hebephrenics and 8 cases of melancholia. He found that there was in general paralysis a marked increase in both the inorganic phosphorus and the total phosphorus. This increase was very much greater than that found in

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cerebral syphilis, and suggests a means of differential diagnosis. He also found the values for both inorganic and total phosphorus greater in hebephrenic than in catatonic dementia præcox. The values in melancholia were within the normal range. G. W. T. H. FLEMING.

Neurolysis in the Human Cerebro-spinal Fluid [Il processo neurolitico nel liquido cerebrospinale umano]. (*Rass. di studi psichiat., vol. xxii, p.* 214, *March-April,* 1933.) *Meco, O.*

The author examined the cerebro-spinal fluids of 246 patients, and found that 78% gave a positive result when tested against neural tissue, as Speransky has shown. This neurolytic power was unaffected by inactivation, by filtration, boiling or centrifugalizing, and was more marked in diseases affecting the grey matter than in those affecting the white. This power is probably due to some unknown products of cellular activity. The neurolytic power of the fluid is increased by the presence of the products of neural disintegration.

G. W. T. H. FLEMING.

The Citric Acid Reaction in the Cerebro-spinal Fluid [La reazione con l'acido citrico sciropposo nel liquor]. (*Riv. di Pat. Nerv. e Ment., vol. xl, p.* 675, *Nov.-Dec.,* 1932.) *Leanza, A.*

The author investigated the "syrupy" citric acid test, which is supposed to indicate the presence of mucin in the cerebro-spinal fluid, in 10 normal subjects and 215 subjects with various nervous or mental disorders. He found the reaction positive in 40 out of 215 (*i.e.*, 18%), of which 21 were syphilitic affections of the nervous system. The reaction was negative in all non-syphilitic psychoses, and was of no value in differentiating between cerebral syphilis and general paralysis. There was no relation between a positive reaction and an increase in the number of cells.

The author considers that the positive reaction is due neither to mucin nor to globulin, but to some form of serum protein. G. W. T. H. FLEMING.

A New Globulin Precipitation Reaction in the Cerebro-spinal Fluid for the Diagnosis of General Paralysis [Su una nuova reazione di precipitazione delle globuline nel liquor per la diagnosi di paralisi progressiva]. (*Riv. di Pat. Nerv. e Ment., vol. xl, p.* 537, *Nov.-Dec.,* 1932.) *Cabitto, L.*

The author describes a new reaction which he has introduced. The reaction is more sensitive than the reactions of Nonne-Appelt or Weichbrodt, and is specific for general paralysis and tabes in 100% of cases and negative in other conditions.

The reagent is made by dissolving ·5 gr. of phosphomolybdic acid in 100 c.c. of distilled water. It will keep indefinitely. To 1 c.c. of cerebro-spinal fluid is added ·2 c.c. of reagent. At the point of contact of the two liquids a ring forms. The test-tube is shaken, and the reaction is positive if the turbidity spreads throughout the liquid. If the reaction is negative, the liquid remains clear. The reaction was negative in some cases of nervous and mental disease, where the reactions of Pandy, Weichbrodt, Taccone, Boltz, Nonne-Appelt and Takata-Ara were all "one plus". G. W. T. H. FLEMING.

A New Reaction to Estimate Changes in the Cerebro-spinal Fluid [Una nuova reazione di orientamento per svelare le alterazioni del liquor]. (*Rasseg. di Studi Psich., vol. xxii, p.* 65, *Jan.-Feb.,* 1933.) *Amodeo, P.*

The author describes a new reaction in the cerebro-spinal fluid, which consists of adding 1–2 drops of nitrous-nitric acid to ½–1 c.c. of fluid. The resulting mixture is heated almost to boiling-point. The reaction is positive if the liquid becomes opalescent and deposits albumen as flakes at the bottom of the tube, and negative if the fluid remains clear. The results closely parallel those of the Boltz, Pandy and similar reactions. G. W. T. H. FLEMING.

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Taccone's Reaction in the Cerebro-spinal Fluid [*La reazione di Taccone sul Liquido cefalo-rachidiano*]. (*Riv. di Pat. Nerv. e Ment., vol. xl, p. 1, July–Aug.,* 1932.) *Pacifico, A.*

The author investigated 150 spinal fluids by means of Taccone's reaction. He found the reaction very sensitive, very simple and easily read. It has a distinct use in the diagnosis of disease of the cerebro-spinal axis and its membranes. Its sensitivity being considerably greater than other similar reactions, its use is greatest in those conditions where the increase of globulin in the fluid is only small.

G. W. T. H. FLEMING.

Müller's Reaction in the Cerebro-spinal Fluid [*La reazione di Müller nel liquido cerebro-spinale*]. (*Riv. di Pat. Nerv. e Ment., vol. xl, p. 94, July–Aug.,* 1932.) *Sacchetti, N.*

The author used Müller's reaction on the fluids of 194 patients with various syphilitic and non-syphilitic nervous diseases. He found that the reaction is more sensitive than the Wassermann, particularly in general paralytics who had had malarial treatment.

G. W. T. H. FLEMING.

The Value of Hohn's Modification of the Meinicke Clarification Reaction [*Sul valore della M.K. Ho., una modificazione di Hohn alla reazione di chiarificazione di Meinicke (M.K.R.I.)*]. (*Rasseg. di Studi Psich., vol. xxii, p. 23, Jan.–Feb.,* 1933.) *Masignani, V.*

The author compared the Hohn modification of the Meinicke reaction with the Meinicke reaction itself and the Wassermann reaction of 216 sera and 102 cerebro-spinal fluids. He found that there was no appreciable advantage of the Hohn modification over the other reactions.

G. W. T. H. FLEMING.

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Part IV.—Notes and News.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Ninety-second Annual Meeting.

The Ninety-second Annual Meeting of the Association was held on Wednesday, Thursday and Friday, July 5 to 7, 1933, partly at the Town Hall, Clacton-on-Sea, and partly at the Albert Hall and the Royal Eastern Counties Institution, Colchester, under the Presidency, in the earlier proceedings, of Robert Brown Campbell, M.D., F.R.C.P.E. (Retiring President), and later of F. Douglas Turner, M.B., M.R.C.S., L.R.C.P. The Council and Committees met on the previous day, Tuesday, July 4.

Wednesday, July 5.—Morning Session.

At the Albert Hall, Colchester.

Dr. R. B. Campbell in the Chair.

MINUTES.

The minutes of the last Annual Meeting, held at Stirling, having already been published, were taken as read, and confirmed.

OBITUARY.

Obituary references were made to the following members who had died since the last meeting: Drs. Henry A. Cotton and Juliano Moreira, Corresponding Members, and Drs. H. J. Mackenzie, L. D. Hamilton Baugh, and Patrick Shaw, Ordinary Members.

ELECTION OF OFFICERS AND COUNCIL FOR 1933–34.

The following resolutions were put from the Chair:

(*a*) That the Officers of the Association for 1933–34 be:

President.—Frank Douglas Turner, M.B., M.R.C.S., L.R.C.P.
President-Elect.—Daniel Frederick Rambaut, M.A., M.D.
Ex-President.—Robert Brown Campbell, M.D., F.R.C.P.E., *J.P.*
Treasurer.—George William Smith, *O.B.E.*, M.B.
General Secretary.—Reginald Worth, *O.B.E.*, M.B.
Registrar.—Daniel Frederick Rambaut, M.A., M.D.
Editors of Journal.—
Douglas McRae, M.D., F.R.C.P.E.
Maurice Hamblin Smith, M.A., M.D.
Alexander Walk, M.D., D.P.M.
G. W. T. H. Fleming, M.R.C.S., L.R.C.P., D.P.M.
Librarian.—James Richard Whitwell, M.B. [**Agreed.**

(*b*) That the nominated Members of the Council for 1933–34 be:
Drs. A. Helen Boyle, J. F. W. Leech, T. R. C. Spence, J. S. I. Skottowe, Aidan G. W. Thomson, J. J. O'Reilly. [**Agreed.**

(*c*) That the Parliamentary Committee, as revised by the Council, be re-appointed.
Retirement: Dr. Dixon. [**Agreed.**

(*d*) That the Educational Committee be re-appointed.

Dr. M. Abdy Collins said he understood that one at least, and perhaps more, members of the Educational Committee had announced their intention not to hold the Association's examination for nurses any longer. That was quite within their rights, but he thought those members

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might be asked whether they still wished to be members of the Educational Committee. (Hear, hear.)

He proposed that the General Secretary might ascertain from the members in question whether, in the circumstances, they still wished to remain members of the Educational Committee.

Dr. LEEPER seconded. [**Agreed.**

(*e*) That the Library Committee be re-appointed, with the addition of the name of Dr. William Starkey. [**Agreed.**

(*f*) That the Research and Clinical Committee be re-appointed with the addition of the name of Dr. Alexander Walk. [**Agreed.**

(*g*) That the Mental Nursing Advisory Committee (Official Members) be re-appointed as follows:

For England and Wales.—Drs. H. Dove Cormac, W. G. Masefield, G. W. Smith, F. R. P. Taylor, A. A. D. Townsend.

For Scotland.—Drs. Douglas McRae, T. C. Mackenzie, Wm. M. Buchanan, R. D. Hotchkis, Donald Ross.

For Northern Ireland.—Drs. F. J. Deane, Dorothy Gardner, N. B. Graham, M. J. Nolan, J. Watson.

For Irish Free State.—Drs. S. Blake, J. O'Conor Donelan, L. Gavin, R. R. Leeper, J. C. Martin. [**Agreed.**

(*h*) That G. F. Barham, M.A., M.D., and R. J. Stilwell, M.R.C.S., L.R.C.P., be appointed Honorary Auditors. [**Agreed.**

(*i*) That the Maudsley Lecturer for 1934 be the Right Hon. Lord Macmillan, M.A., LL.D., Lord of Appeal in Ordinary.

The PRESIDENT stated that Lord Macmillan had accepted the invitation to give the Lecture, which, on this occasion, would be a popular one. [**Agreed.**

REPORT OF THE COUNCIL.

THE Council begs to submit its 37th Annual Report as under:

The number of members—ordinary, honorary and corresponding—as shown in the list of names published in the *Journal of Mental Science* for January, 1933, was 883, as compared with 869 in 1932.

1931.		1932.
49	Number of new members elected	38
869	Number of members registered.	883
..	Removed according to Bye-law 17	..
23	Number of members resigned	14
11	Number of deaths	15

Members:	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.
Ordinary . .	710	694	703	700	706	727	753	771	787	801
Honorary . .	30	29	29	30	31	33	35	36	36	37
Corresponding .	14	16	16	15	17	22	31	40	46	45
	754	739	748	745	754	782	819	847	869	883

The above figures show that the increase in the number of members is well maintained.

Research and Clinical Committee.

Much time and work has been spent by the Sub-Committee on Clinical Psychiatry on the drawing up of the new schedule of classification of mental disorders. The schedule has now been completed and approved by the Council.

The question of providing information regarding literature in the form of small monograph supplements to the *Journal of Mental Science* is being considered by a small sub-committee in conjunction with the Editors.

The Pathological, Biochemical and Bacteriological Sub-Committee submitted a Resolution requesting that authority be granted to them to create a body within the jurisdiction of the Association for the purposes of including such of its members as are particularly interested in

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the study of pathology in relation to mental disease. The matter was referred to the Special Sections Committee for consideration.

The meetings of the Committee are always well attended, and great enthusiasm is shown by the members.

Educational Matters.

The number of entries for the nursing certificate is steadily increasing, the grand total of entries for May-November, 1932, being 7,132. The number of entries for November, 1932, examination—2,724—was greater by 853 than the number of entries for November, 1925—Dr. Rambaut's first year as Registrar.

Two sub-committees have been appointed. The first is to discuss the question of "Occupational Therapy and its introduction in the examination for the Certificate of Proficiency in Nursing". The other was appointed, following a proposal "to call the attention of all Examining Bodies conferring the Diploma in Psychological Medicine to the desirability of candidates furnishing proof of having held a resident appointment in an approved hospital or institution for at least two years before such Diploma is conferred." Its terms of reference are "to consider and furnish a report concerning the respective regulations of the examining bodies conferring the D.P.M.".

A letter has been received from the General Nursing Council concerning the abolition of the Mental Nursing Advisory Committee. Dr. Worth sought an interview with the Minister of Health, with special reference to the appointment of examiners. After the interview the Minister promised to write to Dr. Worth on the matter, but, so far, no letter has been received.

Parliamentary Matters.

The proposed Local Government and Other Officers' (Superannuation Amendment) Bill has occupied a great deal of the time and attention of the Parliamentary Committee, and a special meeting to discuss this matter was called in January last. Dr. Haynes attended a Conference at the Guildhall at which were representatives of the Mental Hospitals Association, British Medical Association, Incorporated Association of Clerks and Stewards, and the Mental Hospitals and Institutional Worker's Union. At this Conference it was decided to ask the Minister of Health to receive a deputation. Drs. Haynes and Worth were appointed the Association's delegates. The Minister of Health, however, declined to meet a joint deputation, and it is expected that a deputation will be invited to attend a meeting of private members of the House of Commons on the subject.

The Private Members' Bill dealing with insanity as grounds for divorce has twice been counted out in the House of Commons, and there is no possibility of its making further progress.

The Library.

Considerable use has been made of the Library during the past year, many members having used it for reference, and the number of books issued has been steadily increasing. Some difficulty has been experienced in regard to the circulation of journals; many of these journals are not returned to the Library, and, during the past ten years, 162 have been lost in this way, the result being an accumulation of incomplete volumes that cannot be bound so as to become a useful addition to the Library. The method of issuing journals has now been revised. It has been decided that the Association will pay the outward cost of carriage on books.

The Library has been considerably enriched by the addition of a large number of books bequeathed to it by the late Prof. Robertson, and of over 100 books presented by Dr. Hamblin Smith, and valuable additions of historical interest have been given by the Honorary Librarian and Dr. W. Starkey. Several other members have also presented books. All these gifts are greatly appreciated.

Thanks are due to Dr. Whitwell for the time and work he bestows upon the Library.

The Journal of Mental Science.

The *Journal of Mental Science* has now appeared in its new guise—the size and paper having been altered to correspond with that of modern scientific periodicals.

A Special Monograph number on "Sinusitis in Mental Disorder" was published, the cost of illustrations being met by a grant voted in 1927 for the production of the Monograph.

The publication of monographs embodying collected abstracts of literature has been discussed in conjunction with the Research and Clinical Committee.

Miscellaneous Matters.

Dr. A. Walk represented the Association at the Belgian Congress of Psychiatry held at Ghent.

Dr. E. Litteljohn was re-appointed as the Association's representative on the Council of the Central Association for Mental Welfare.

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Dr. E. O. Lewis was appointed to represent the Association on the Committee of Administration to deal with the donation of £10,000 from Mrs. R. G. Burden towards research work.

Dr. W. J. T. Kimber has consented to act as the Association's representative, in place of the late Dr. J. R. Lord, on the Child Guidance Council.

Owing to the deaths of Sir Frederick Mott and Dr. D. Nicolson it has been necessary to appoint new Trustees to the Gaskell Fund. Five members have been appointed.

It has been agreed to award a prize for mental nurses in memory of the late Dr. Campbell Clark. The prize will take the form of a gold medal, suitably engraved, with a money prize of three guineas, and will be awarded twice yearly, at the May and November examinations. It will be presented to the nurse, male or female, who, having trained for three years in one institution, obtains the highest percentage of marks in the final examination.

It has been necessary, owing to the appointment of a paid secretary, to rent another room at Chandos Street for use as an office.

The Report of the B.M.A. regarding the relationship of the private practitioner to the treatment of mental disability has caused great discussion. The Association sent the following resolution to the B.M.A., "That in the opinion of this Meeting the policy of the B.M.A. in regard to the treatment of Mental Disease is not in the best interests of the Patient and of Psychiatry". A letter has been received from the B.M.A. asking the Association to state their reasons for passing this resolution. A reply has been sent, pointing out that the reasons were fully stated by the Association's representatives at the meetings of the B.M.A. Committee which drafted the Report, as well as at the Annual Representative Meeting, and inviting further discussion. Drs. Worth and Rice are representing the Association at a joint conference with the Mental Hospitals Association.

Dr. M. A. Collins has been re-appointed as Representative of the Association on the General Nursing Council.

The question of providing badges for Divisional Chairmen has again arisen. It was agreed at the Annual Meeting in July, 1929, that such badges should be supplied. The matter is now in the hands of the Treasurer, who is obtaining an estimate of the cost.

The Maudsley Lecture for 1932 was given in November last by Sir Edward Farquhar Buzzard.

The Maudsley Lecture for 1933 was given by Dr. Adolf Meyer in May. Dr. Meyer lectured on "British Influence in Psychiatry and Mental Hygiene". Both these lectures were well attended.

At a meeting of members of the Association interested in mental deficiency, a resolution was passed requesting that authority be granted to them to create a body within the jurisdiction of the Association for the purposes of including such of its members as are particularly interested in the study and treatment of mental deficiency. A Special Committee has been appointed to consider whether it would be advantageous to the Association to form Sections within the Association.

The Association has sustained great loss by the deaths of many valued members. Two Past Presidents have passed away—Dr. David Nicolson, who was President in 1895–96, and Dr. Bedford Pierce, President in 1919–20. Several of the deceased members have done great work for the Association, and they will be sadly missed.

Obituary.

Honorary Member: Edward N. Brush.

Corresponding Members: Henry A. Cotton, Juliano Moreira.

Ordinary Members: David Nicolson, C.B. (President, 1895–96), Bedford Pierce (President, 1919–20), W. F. Blandford, G. H. Rae Gibson, J. H. Skeen, G. S. Pope, Theo. Hyslop, Alan McDougal, C. Beadles, Percy Hughes, Patrick Shaw, H. J. Mackenzie, L. D. H. Baugh.

Dr. WORTH (General Secretary), read the Report, which had been circulated, in abstract, and moved its adoption.

Dr. G. W. SMITH (Hon. Treasurer), seconded. **[Agreed.**

REPORT OF THE TREASURER.

The Treasurer submits herewith the Revenue Account and Balance Sheet for 1932, and also the Financial Statement of the Maudsley Bequest and of the Gaskell Fund.

Dr. G. W. SMITH (Hon. Treasurer) read the Report and moved its adoption, adding that the Bank Balance was £542 7*s.* 6*d.*, and that there was £400 on Deposit.

Dr. WORTH seconded. **[Agreed**

The PRESIDENT remarked that the Hon. Treasurer deserved the congratulations of the members of the Association for the way in which the healthy state of the finances had been maintained.

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ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

BALANCE-SHEET as at 31st December, 1932.

1931.	Liabilities.	£ s. d.	£ s. d.	£ s. d.
	CREDITORS—			
363 11 8	Printing and distribution of Journal		328 18 8	
273 5 0	Examiners Fees		268 5 0	
15 15 0	Subscriptions received in advance		11 0 6	
140 11 0	Sundry		166 15 0	
				774 19 2
	SPECIAL FUNDS INCOME AND EXPENDITURE ACCOUNTS—			
	Special Research Fund—			
39 14 0	As per last Balance-Sheet		39 14 0	
	Maudsley Bequest—			
	As per last Balance-Sheet	259 16 8		
	Less Lecturer's Honorarium for 1931	52 10 0		
		207 6 8		
	Add Excess of Income over Expenditure for year to date as per detailed account	46 14 6		
259 16 8			254 1 2	
	Gaskell Fund—			
	As per last Balance-Sheet	207 0 6		
	Add Excess of Income over Expenditure for year to date as per detailed account	23 9 4		
207 0 6			230 9 10	
				524 5 0
	CAPITAL ACCOUNT—GENERAL FUND—			
	As per last Balance-Sheet		13,953 4 3	
	Add Excess of Income over Expenditure for year to date as per detailed Revenue Account		990 5 6	
			14,943 9 9	
	Less Subscriptions written off	128 18 6		
	Balance of Mott Memorial Fund written off	230 3 0		
			359 1 6	
13,953 4 3				14,584 8 3
	CAPITAL ACCOUNT—MAUDSLEY BEQUEST—			
	Market Value of the Investment representing the capital of this Bequest at 31st December, 1932 (*see Contra*)			2,086 5 10
£15,252 18 1				£17,969 18 3

1931.	Assets.	£ s. d.	£ s. d.	£ s. d.
	FURNITURE, FIXTURES AND FITTINGS, 11, CHANDOS STREET, W.1—			
	Acquired during year to date		260 19 0	
	LIBRARY—			
146 3 4	As per last Balance-Sheet			146 3 4
	INVESTMENTS—			
	General Fund—			
£11,787 3 9	3½% Conversion Loan	9,770 15 2		
1,864 1 2	3½% War Loan	1,919 19 7		
634 8 3	New Zealand 3½% Stock 1940	564 12 6		
320 14 8	Ditto, ditto (Hack Tuke)	285 9 0		
103 7 2	Victoria 3% Stock 1929-49 (Dr. Paul)	56 6 6		
405 18 1	New South Wales 3½% Stock 1930-50	221 4 3		
213 18 1	Manchester Corporation 3% Stock	143 6 3		
386 0 0	London, Midland and Scottish Railway 4% Preference Stock	239 6 5		
		13,200 19 8		12,200 19 8
	Maudsley Bequest—			
	£2,112 13 11 3½% War Loan	2,086 5 10		
	Note.—The Market Value of the above Investments at the date of the Balance-Sheet amounted to £17,303 18 0.		15,287 5 6	
	DEBTORS—			
	For Subscriptions	296 6 3		198 5 3
	Examination Fees less Expenses	547 16 3		1,535 12 8
	Sundry	81 8 1		
			925 10 7	64 6 4
	MOTT MEMORIAL FUND			230 12 11
	CASH AT BANK—			
	On Current Account	949 19 10		476 17 11
	On Deposit Account	400 0 0		400 0 0
			1,349 19 10	
				£17,969 18 3 £15,252 18 1

The above Balance-Sheet has been prepared by us as Accountants from the books, accounts and documents of the Association and from information obtained from the Honorary Treasurer. It has not been audited by us, but we have made all adjustments which appeared to us to be necessary for the accurate preparation of the said Balance-Sheet, which to the best of our knowledge and belief is true and correct, and in accordance with the information and explanations afforded to us.

G. W. SMITH, *Hon. Treasurer.*

3, LONDON WALL BUILDINGS,
LONDON WALL, E.C. 2;
2nd June, 1933.

MYERS, DAVIES, & CO.,
Chartered Accountants.

We, the undersigned, being the Auditors appointed by the Royal Medico-Psychological Association, hereby certify that we have examined the above Balance-Sheet, dated 31st December, 1932, with the books and vouchers relating thereto, and that in our opinion it is correct and in accordance therewith.

(*Signed*) G. F. BARHAM
REGINALD J. STILWELL } *Hon. Auditors.*

2nd June, 1933.

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REVENUE ACCOUNT for the Year ending 31st December, 1932.

Dr. **Expenditure.**

1931. £ s. d.		£ s. d.	£ s. d.	£ s. d.
1,308 1 3	To Printing, Publication and Distribution of Journal		1,415 18 6	
2,374 7 3	,, Expenses of Examinations and Prizes		2,337 2 8	
519 16 5	,, Expenses of Annual, General and other Meetings		408 19 1	
26 0 0	,, Library Expenses	52 8 3		
	,, *Less* Interest on £320 14s. 8d. 3½% New Zealand Stock 1940	8 5 8		
			44 2 7	
	,, Expenses, 11 Chandos Street, W. 1:			
80 0 0	Rent	150 11 8		
	Salary	45 6 4		
	Telephone	3 3 1		
	Sundry Expenses	3 16 9		
			202 17 10	
12 12 0	,, Accountancy Charges		12 12 0	
247 7 7	,, Miscellaneous Expenses		223 7 4	
4,568 4 6				4,645 0 0
	,, Balance, being Excess of Income over Expenditure for the year ending 31st December, 1932, carried to Capital Account (*see Balance Sheet*)			990 5 6
£5,280 19 4				£5,635 5 6

Income. **Cr.**

	£ s. d.	£ s. d.	1931. £ s. d.
By Interest on Investments (less Income Tax)		408 19 9	409 11 4
,, Interest on Deposit Account (,, ,,)		3 3 7	6 19 5
,, Sale of Journal	300 0 0		330 0 0
,, Royalties on Handbook	82 13 0		124 13 0
,, Sale of Statistical Forms, etc.	2 13 11		7 5 5
,, Advertisements in Journal	22 6 5		17 17 0
		407 13 4	
,, Examination Receipts		3,530 14 1	3,183 15 8
,, Members' Subscriptions		1,278 5 9	1,200 17 6
,, Legacy from the Estate of the late Dr. J. R. Lord		6 9 0	
		£5,635 5 6	£5,280 19 4

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MAUDSLEY BEQUEST.

INCOME AND EXPENDITURE ACCOUNT for the Year ending 31st December, 1932.

1931. £ s. d.	Dr. Expenditure.	£ s. d.
52 10 0	To Lecturer's Honorarium	52 10 0
23 16 9	„ Printing and Stationery	1 2 6
2 17 9	„ Balance, being Excess of Income over Expenditure for the Year ending 31st December, 1932 (*see Balance-Sheet*) ...	46 14 6
£79 4 6		£100 7 0

Income.	Cr. £ s. d.	1931. £ s. d.
By Interest on Investment (*less* Income Tax) ...	79 4 6	79 4 6
„ Bonus on Investment	21 2 6	— — —
	£100 7 0	£79 4 6

GASKELL FUND.

INCOME AND EXPENDITURE ACCOUNT for the Year ending 31st December, 1932.

1931. £ s. d.	Dr. Expenditure.	£ s. d.
	To Prize	30 0 0
	„ Engraving Medal	0 9 6
	„ Examiners' Fees and Expenses ...	6 14 10
1 11 6	„ Advertisement	— — —
57 12 0	„ Balance, being Excess of Income over Expenditure for the Year ending 31st December, 1932 (*see Balance-Sheet*) ...	23 9 4
£59 3 6		£60 13 8

Income.	Cr. £ s. d.	1931. £ s. d.
By Interest on Trustee Investments (*less* Income Tax) as follows:		
£370 0s. 0d. 5 *per cent.* War Loan, 1929-47	13 17 6	13 17 6
£1,380 14s. 3d. New Zealand 3½ *per cent.* Stock, 1940	35 12 9	37 9 0
£337 11s. 0d. New South Wales 3 *per cent.* Stock, 1935	7 9 5	7 17 0
„ Bonus on £370 5 *per cent.* War Loan, 1929-47	3 14 0	— — —
	£60 13 8	£59 3 6

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REPORT OF THE EDITORS.

During the year the "Special Monograph Number" on "Sinusitis in Mental Disorders" was issued (July, 1932). As stated in the last report, the cost of the illustrations is being met out of a special grant, and is therefore not included in the accounts appended to this Report.

The production of this number increased the total size of the Journal from 930 to 1,043 pages. As a result of economies in other directions, however, and particularly reduced printers' charges, the cost of the Journal remained practically unchanged.

Since January, 1933, the appearance of the Journal has been improved by the adoption of a new format, paper and type. The practical advantages of this were set out in last year's report.

The management of advertisements has been placed in the hands of a firm of advertising agents. The results have been very satisfactory, the advertisement revenue for the last number published (April, 1933) exceeding the total for the whole of 1932. There is no doubt that the income from this source is capable of further expansion.

The question of the publication of monographs consisting of collected abstracts on particular subjects was considered by the Research and Clinical Committee. The Editors have undertaken to give practical effect to their recommendation.

Meanwhile the Epitome section of the Journal is being extended. The Editors would welcome the co-operation of a larger number of members in the provision of epitomes and reviews, and they wish to express their hearty thanks to those, both within and outside the Association, who have assisted in this way during the past year.

Analysis of Cost of Journal, 1931–32.

1931.						*Debit.*	1932.					
£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
815	3	6				Printing of text	825	7	11			
49	1	6				Illustrations	69	0	6			
91	14	6				Paper for text	90	8	0			
42	11	0				Cover and advertisements	36	3	6			
85	6	6				Binding	76	7	0			
			1,083	17	0					1,097	6	11
94	1	9				Reprints	79	8	0			
12	7	7				Wrappers	12	10	2			
56	6	7				Dispatch	62	14	4			
			162	15	11					154	12	6
6	3	0				Stationery	8	10	6			
17	11	1				Postage and index	17	14	1			
			23	14	1					26	4	7
41	8	6				Publishers' fees	40	19	0			
			41	8	6					40	19	0
			£1,311	15	6					£1,319	3	0

1931.						*Credit.*	1932.					
£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
333	14	3				Sale of Journal, etc.	300	14	0			
17	7	11				Advertisements	22	6	5			
			351	2	2					323	0	5

Cost of Journal.

1931.		1932.
£960 os. 10*d*.	Net cost of Journal	£996 2*s*. 7*d*.
5*s*. 5*d*.	Cost of production per copy	5*s*. 5*d*.
4*s*. 4*d*.	Cost to Association per copy	4*s*. 1*d*.
930	Size of Journal in pages	1043.

Dr. WALK read the Report and moved its adoption.

Dr. McRAE seconded.

The PRESIDENT said that the Association was much indebted to the Editors of the Journal for the work they did. It was a pleasure to hear that a new source of revenue had been tapped.

[**Agreed.**

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REPORT OF HON. LIBRARIAN AND OF LIBRARY COMMITTEE.

The Library Committee can report a real step forward for the year that has just passed. They feel that the return to Chandos Street has been appreciated by those members who wish to make use of the facilities which the Library affords.

The Library Committee wish to acknowledge their indebtedness to Dr. Whitwell, the Hon. Librarian, for the good work and constant attention which he has given to the Library, in the arranging of books and their care. It is a matter of congratulation that Dr. Whitwell has continued in his task with so much enthusiasm.

The difficulties that have arisen in regard to the circulation of journals are mentioned in the Report of the Council. The method of issuing journals has now been revised.

It has been agreed and sanctioned by the Council that the cost of postage for outward-bound books and periodicals shall in future be paid out of the funds of the Association.

The Committee wish to thank those members who have presented books to the Library, and especially to express their gratitude to Dr. Hamblin Smith for his donation of over 100 volumes.

Dr. McDowall, in the absence of Dr. Whitwell, presented the Report and moved its adoption. Dr. Walk seconded. **[Agreed.**

REPORT OF HON. AUDITORS.

We, the undersigned, having examined the Treasurer's books, and having duly compared and scrutinized receipts and vouchers, hereby certify that the accounts and Balance-sheet, as set forth, represent a true statement of the Royal Medico-Psychological Association's finances for the year 1932.

G. F. Barham
R. J. Stilwell } *Hon. Auditors.*

Dr. G. W. Smith, in the absence of the Auditors, read the Report and moved its adoption. **[Agreed.**

REPORT OF THE REGISTRAR.

The total number of entries for the Preliminary and Final Examinations for the year 1932 was 7,132; of these 797 were candidates for the Mental Deficiency Section.

Of the 7,132 candidates, 4,258 were for the Preliminary Examination, and 2,874 for the Final Examination.

There were 4,408 entries for the May, 1932, Examinations—2,640 Preliminary, and 1,768 Final.

For the November, 1932, Examinations there were 2,724 entries—1,618 Preliminary, 1,106 Final.

The total entries for the year 1932—7,132—are greater by 1,563 than the entries for 1925—my first year as Registrar.

The details of the Preliminary Examinations in the year 1932 are as follows:

Class of institution.	Entries.	Passes.	Percentage.
English County Mental Hospitals	2,118	1,368	64·58
English Borough Mental Hospitals	406	283	69·70
Registered Hospitals and Licensed Houses	204	127	62·25
Scottish Mental Hospitals	594	362	60·94
Irish Mental Hospitals	435	131	30·11
Federated Malay States	1	1	100·00
Mental Deficiency Section	500	288	57·60
Totals	4,258	2,560	60·12

In the year 1931 there were 4,071 entries for the Preliminary Examination. Of these 2,520 passed—a percentage of 61·90.

The details of the Final Examinations in the year 1932 are:

Class of institution.	Entries.	Passes.	Distinctions.	Percentage of		
				Passes to entries.	Dists. to entries.	Dists. to passes.
English County Mental Hospitals	1,569	936	21	59.65	1·33	2·24
English Borough Mental Hospitals	279	190	7	68·10	2·50	3·67
Registered Hospitals and Licensed Houses	117	92	12	78·63	10·25	13·04
Scottish Mental Hospitals	344	226	3	65·69	0·87	1·32
Irish Mental Hospitals	266	150	2	56·39	0·75	1·33
Federated Malay States	2	0	0	..	..	..
Mental Deficiency Section	297	204	8	68·68	2·69	3·91
Totals	2,874	1,798	53	62·56	1·84	2·94

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In the year 1931 there were 2,701 entries; 1,731 passed—69 with distinction. The percentage of passes to entries was 64·08. The percentage of distinctions to entries was 2·55, and to passes 3·98.

May, 1933, Examinations.

For the May, 1933, Examinations the entries numbered 4,384. Of this number 2,594 were Preliminary (307 Mental Deficiency Section), and 1,790 Final (152 Mental Deficiency Section).

The analysis of the results is as follows:

Preliminary.

Class of institution.	Entries.	Passes.	Percentage
English County Mental Hospitals	1,340	731	54·55
English Borough Mental Hospitals	214	162	75·70
Registered Hospitals and Licensed Houses	147	93	63·26
Scottish Mental Hospitals	340	192	56·47
Irish Mental Hospitals	246	107	43·49
Mental Deficiency Section	307	173	56.35
Totals	2,594	1,458	56·20

Final.

Class of institution.	Entries.	Passes.	Distinctions.	Percentage of: Passes to entries.	Dists. to entries.	Dists. to passes.
English County Mental Hospitals	955	637	27	66·70	2·82	4·23
English Borough Mental Hospitals	183	155	3	84·69	1·63	1·93
Registered Hospitals and Licensed Houses	128	108	3	84·37	2·34	2·77
Scottish Mental Hospitals	240	214	5	89·16	2·08	2·33
Irish Mental Hospitals	132	84	0	63·63	..	..
Mental Deficiency Section	152	100	1	65·78	0·65	1·00
Totals	1,790	1,298	39	72·51	2·17	3·00

There were 133 candidates whose papers were marked 45 to 49 (both inclusive). On re-assessment 57 of these papers were raised to a "Pass" mark, and 76 remained "Failed".

There were 7 entries for the Examination for the Gaskell Gold Medal and Prize. The Examiners reported that 2 candidates were equal in merit, and they recommend that each of them should receive a medal and a prize.

Four essays were submitted for the Bronze Medal and Prize. The winning essay bore the motto "Labor omnia vincit". The Examiners and President recommend that the writer of the essay with the motto "Fiat Lux" might be awarded either a prize only or a medal only, assuming that a second medal *and* prize cannot be given.

There was one candidate for the Certificate in Psychological Medicine—Dr. A. Baldie, 7, Warrington Gardens, London, W. 9. He was successful in passing the Examination.

One Divisional Prize was awarded.

The Campbell Clark Prize for the Mental Nurse who obtained the highest number of marks in the Examination for the Certificate for Proficiency in Mental Nursing has been awarded for the first time. The successful candidate obtained an aggregate of 177 marks out of a possible 200 in the May, 1933, Examination.

Dr. D. F. Rambaut read the Report and moved its adoption.

Dr. F. R. P. Taylor seconded.

The President said that before putting this to the meeting he felt that the gratitude of members must be expressed to the Registrar for the very detailed Report which he had just presented, and they would wish to thank him for the great amount of work which his office entailed. (Applause.) In connection with the Essay for the Bronze Medal, the Council had decided that the writer of the second best essay should receive a money prize of five guineas. He hoped the meeting approved of the Council's action. (Applause.) [**Agreed.**

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REPORT OF THE EDUCATIONAL COMMITTEE.

The Educational Committee begs to submit the following Report for the year ending June 30, 1933.

During the year four meetings have been held, which have been well attended.

In order to obtain some degree of uniformity in the consideration of applications from Institutions for Mental Defectives for recognition by our Association, the Training Sub-Committee went fully into the matter, and the following recommendations were agreed upon:

1. That no Institution with less than an annual average of 50 patients be recognized.
2. That at least one member of the Nursing Staff engaged in training and teaching the Staff must hold the Certificate of our Association in the Nursing of Mental Defectives, or the equivalent Certificate of the General Nursing Council.
3. That it is not considered necessary for a Medical Officer to be resident.

The following Institutions have been recognized during the year:

Coldeast Colony, near Southampton.
Botleys Park Certified Institution, Surrey.
Clerks Croft Certified Institution, Surrey.
Gogarburn Certified Institution, Edinburgh.

The question of Occupational Therapy has formed the subject of considerable discussion, and a special sub-committee was appointed to inquire into the possibility of an examination being instituted for mental nurses on this subject.

A special committee has also been appointed to consider and furnish a report concerning the regulations of the respective examining bodies conferring the D.P.M.

Nominations for the posts of Examiner for the year were received in time for the May meeting, and were sent forward as recommendations to the Council.

Dr. MASEFIELD read the Report and moved its adoption.
Dr. F. R. P. TAYLOR seconded. **[Agreed.**

REPORT OF THE PARLIAMENTARY COMMITTEE.

There have been five meetings of the Committee during the year.

At the meeting held in November last, Dr. Nathan Raw was re-elected Chairman, Dr. Menzies Vice-Chairman, and Dr. Haynes, Hon. Secretary. The chief work during the year has been centred around the Superannuation Amendment Bill. A special meeting to discuss this matter was held in January last.

Dr. Haynes attended a Conference at the Guildhall, at which were representatives of the Mental Hospitals Association, British Medical Association, Incorporated Association of Clerks and Stewards, and the Mental Hospitals and Institutional Workers' Union. At this Conference it was decided to ask the Minister of Health to receive a deputation. Drs. Haynes and Worth were appointed the Association's delegates. The Minister of Health, however, declined to meet a joint deputation, and it is expected that a deputation will be invited to attend a meeting of private members of the House of Commons on the subject.

This Bill was still under discussion in the House of Commons; certain negotiations were being carried on, but it was expected that the Bill would be passed within the next few hours.

Considerable discussion upon the statement that £500 was the average annual cost of a mental hospital patient has taken place during the year. The matter was finally cleared up in June by a statement from the Minister of Health that this figure was meant to represent the capital cost of providing a bed in a mental hospital.

A Private Members' Bill dealing with insanity as grounds for divorce, has been twice counted out in the House of Commons, and there is no possibility of it making further progress.

It is expected that the report of the Departmental Committee on Sterilization will be published within the next twelve months.

Dr. HAYNES read the Report. He added that he had attended two conferences at the Guildhall on the Superannuation Amendment Bill, which was now probably up for Third Reading. It was not altogether satisfactory. It might even be amended that night. With regard to the "£500 per patient" allegation, a question was asked in the House on it a week ago, and the Minister had pointed out, in reply, that £500 was the estimated capital cost per bed, not the average annual cost.

He moved the adoption of the Report.
Dr. MENZIES seconded. **[Agreed.**

REPORT OF THE RESEARCH AND CLINICAL COMMITTEE.

The Research and Clinical Committee begs to submit the following Report for the year ending July, 1933:

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Meetings.

The Committee has met four times during the year, *viz.*, July 12, 1932; November 21, 1932; February 21, 1933; May 16, 1933.

Changes in Personnel.

The following changes have taken place during the year:

Prof. D. K. Henderson succeeded Dr. C. C. Easterbrook (resigned) as a representative member of county, borough and registered mental hospitals; Dr. W. D. Nicol was elected a representative member of that body; and Dr. C. W. Bower succeeded the late Dr. J. G. Soutar as a representative member of private mental hospitals.

The changes in representative members of Sub-Committees are referred to in the Reports of the Sub-Committees.

At the February, 1933, meeting a resolution was passed to the effect that the names of the Hon. Secretaries of the three merged Sub-Committees (*viz.*, General Paralysis, Epidemic Encephalitis and Actinotherapy) be added to the representation of the Clinical Psychiatry Sub-Committee, thus bringing the number of representative members of that Sub-Committee up to six.

Clinical Meetings.

There has been no notification of any Clinical Meetings held during the year.

Classification of Mental Disorders.

After considerable work on the part of the Clinical Psychiatry Sub-Committee on the above subject, a Classification of Mental Disorders was submitted to the Council at its May meeting, when it was approved; so that this has now become the official Classification of the Association.

Formation of Sections within the Association.

During the year applications were made by the Mental Deficiency, and the Pathology, Bacteriology and Biochemistry Sub-Committees for permission to create bodies within the jurisdiction of the Association for the special study of these branches of psychiatry.

These applications are being dealt with by a Special Sections Committee.

Monographs.

The Committee considered the necessity for summarized abstracts of the present state of knowledge in the various aspects of psychological medicine, together with bibliographies of references to works in the more important languages.

The Council have approved of the Committee's resolution that these monographs should be published by the Editors of the Journal.

Clinical Psychiatry Sub-Committee.

During the year four meetings of this Sub-Committee have been held.

At the February meeting of the Research and Clinical Committee it was resolved that the names of the Hon. Secretaries of the three merged Sub-Committees—*viz.*, Drs. L. C. F. Chevens, W. D. Nicol and P. K. McCowan—be added to the representation of this Sub-Committee, thus bringing its number of representative members up to six.

At the June meeting of the Sub-Committee, Dr. Ross's resignation was received.

The following now represent the Sub-Committee on the Research and Clinical Committee: Drs. Yellowlees, Chevens, Nicol and McCowan. A successor to Dr. Ross has yet to be appointed.

Dr. B. H. Shaw, who has been in touch with the work of the Sub-Committee from the beginning, has now become an active member.

During the year the Classification of Mental Disorders has been completed, and accepted by the Council. A beginning has been made with the provision of Notes on the Classification for the guidance of those using it.

The provision of Clinical Forms of a standard type, which was begun in 1929, is being proceeded with; and it is hoped to finish these at an early date.

Psychotherapy and Psycho-pathology Sub-Committee.

The routine activities of this Sub-Committee have continued throughout the year.

In addition, assistance has been given to the War Prophylaxis Committee of the Dutch Medical Association in the compiling of a bibliography on the psychological aspect of the subject.

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The resignation of Dr. Suttie from the Sub-Committee created a vacancy for a representative member on the main Committee, to which Dr. Hardcastle was appointed.

Dr. Franklin is the other representative member.

Infectious Diseases Sub-Committee.

The Infectious Diseases Sub-Committee met twice during the year 1932–33, namely, in November, 1932, and in May, 1933.

At the November meeting the question of reducing the number of members was considered. The personnel had remained practically the same as when the Sub-Committee was first appointed, and it was considered that the time had now come when a revision should be undertaken. This had been postponed for several reasons, one of which was the death of the first secretary, Dr. Braithwaite. It was decided to communicate with those members who had not taken any active part in the proceedings of the Sub-Committee, asking them if they wished to continue as members. Six members were communicated with, and five replied that for various reasons they felt with regret that they must send in their resignations. These resignations were accepted at the May meeting.

At the meeting held in May, Drs. Rudolf and Shera were elected to act as representatives of the Infectious Diseases Sub-Committee on the main Committee. One new member, Dr. Wishart Davidson, was co-opted.

During the year Dr. Rudolf continued his work on the Incidence of Cancer in Mental Hospitals, and presented Parts 2 and 3 of his Report. Part 3 dealt with the comparison of male death-rates from cancer in mental hospitals and in the general population with regard to age and site, and was illustrated with numerous charts. He is now engaged in preparing Part 4, which will deal with female death-rates compared in a similar manner, and which he hopes to have ready for the next meeting of the Sub-Committee.

At the May meeting Dr. Shera presented an interesting report on ten cases of G.P.I. treated with intrathecal salvarsanized serum.

The Sub-Committee has received inquiries concerning the use of a Flexner dysentery vaccine as a prophylactic measure in dealing with dysentery in mental hospitals. The matter is under consideration at present, and the Committee hope to be able to publish a report in due course.

In the October, 1932, number of the *Journal of Mental Science* there appeared Dr. Shera's Report to the Sub-Committee on cases of Salmonella infection arising in mental hospitals.

Pathology, Bacteriology and Bio-Chemistry Sub-Committee.

The scope of this Sub-Committee has been somewhat enlarged by the inclusion of pathological work formerly embraced by the Epidemic Encephalitis and General Paralysis Sub-Committees. Efforts have been made to encourage registration of individual research schemes for the purpose of mutual interest and help, but without much success, and the list stands the same as that given last year.

There has been no occasion, so far, to obtain the assistance of the special advisers to the Sub-Committee.

There has been some difficulty in arranging the times of the meetings to suit all members—a matter which has received much consideration. In order to stimulate interest and to obtain mutual assistance in subjects of pathological interest, it has been decided to have papers for discussion at the meetings; and it has therefore been necessary to extend the time for the meetings from one to two hours.

The results of this innovation have been most gratifying, and much useful discussion has followed papers by Dr. Quastel on the "Action of Narcotics upon Brain Tissue", and by Dr. Brazier on the "Electrical Capacity Coefficient in Relation to Thyroid"; a discussion was also held on "Thyroid Treatment in Dementia Præcox", which was opened by Dr. Quastel.

In view of the success of these meetings, it was decided to ask for a reconstitution of the Sub-Committee, in order that its times of meeting could be independently arranged, and that the attendance at the meetings might become available to all members of the R.M.P.A. who were interested. At these meetings, papers would be read and discussed, without right of publication, in order to obtain helpful criticism and assistance in individual research. A motion to this effect has already been before the Research and Clinical Committee.

The following re-appointments have been effected: Drs. Shaw and Ford-Robertson as representatives on the Research and Clinical Committee, and Drs. Pickworth and Drury as Joint Hon. Secretaries.

Mental Deficiency Sub-Committee.

Two meetings of this Sub-Committee have been held during the year. The chief subject of discussion at both meetings was the proposed inquiry into the incidence of nervous and mental

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diseases in the families of persons who appear to be normal. It is proposed to collect at least 1,000 family histories. These, it is hoped, will constitute a satisfactory control group, to serve as a standard with which the family histories of patients suffering from mental disease or deficiency can be compared. The forms for this inquiry are now being distributed.

Drs. Rees Thomas and Berry have been elected as representatives upon the Research and Clinical Committee.

Study Tours Sub-Committee.

The activities of the Sub-Committee during the past twelve months have included the publication of an account of the visit to mental hospitals in West Germany in the spring of 1932, and the organization of a visit to Santpoort Mental Hospital, Holland, last April, which a party of more than 30 members and others attended in order to see the application of the "more active" principles of occupation elaborated by Dr. Simon, of Gütersloh.

Several private visits to Santpoort and other Dutch hospitals have also been arranged, for which we are greatly indebted to our Dutch colleagues, who have given us readily and generously of their time and hospitality.

The representative member for this Sub-Committee is Dr. Haynes, a successor to Dr. Gibson not yet having been appointed.

Dr. McCowan read the Report of the Research and Clinical Committee, and moved that it be adopted.

Dr. Drury seconded. [**Agreed.**

REPORTS OF SPECIAL COMMITTEES AND MOTIONS ARISING THEREON.

Mental Nursing Advisory Committee to the General Nursing Council.

Dr. Worth said there was no report.

Sections Committee.

Dr. Worth reported that on the previous day a meeting of the Sections Committee was held, and the point which arose was whether the Bye-laws or the Charter should be altered, and Sections formed in the Association, in the same way as in the Royal Society of Medicine. A very long discussion took place on these points, and many arguments were put forward on both sides. Finally it was decided that no Sections should be formed at present, but that there should be set up a Standing Committee for Mental Deficiency. This would entail a certain alteration in the Bye-laws, but that could probably be easily done. He moved that this suggestion be approved.

Dr. Haynes seconded.

Considerable discussion took place on this motion. It was pointed out, in the first place, that the necessary Revision of the Bye-laws would involve at least a year's delay in the appointment of the proposed Standing Committee. It was therefore agreed to appoint a Special Committee to act during the interval, and the following resolution was put from the Chair and adopted:

> "That a Special Committee be appointed to deal with the Mental Deficiency aspect of the work of the Association; and that application be made to the Privy Council for authorization to alter the Bye-laws to permit of the appointment of a Standing Committee on Mental Deficiency."

The next point discussed was that of the relation of the new committee to the existing Mental Deficiency Sub-Committee of the Research and Clinical Committee. The Sub-Committee was at present engaged on research work for which funds were required. Some means was sought of securing continuity in the work, as well as ensuring co-ordination with the other activities of the Research and Clinical Committee.

Dr. Menzies proposed "That the existing Mental Deficiency Sub-Committee do become the Special Committee on Mental Deficiency".

Dr. Rudolf proposed as an amendment "That they also remain the Mental Deficiency Sub-Committee of the Research and Clinical Committee".

At Dr. Walk's suggestion, the wording of the original motion was altered to read, "That the present members of the Mental Deficiency Sub-Committee of the Research and Clinical Committee do constitute the Special Committee on Mental Deficiency". Dr. Rudolf later withdrew his amendment.

Dr. Freize Stephens proposed the following amendment: "That the appointment of the Special Committee on Mental Deficiency be made without reference to the existing Sub-Committee".

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After further debate, Dr. Freize Stephens's amendment was put to the vote and declared lost. Dr. Menzies' motion, as altered, was then agreed to.

It was understood that the dissolution of the existing sub-committee would rest with the Research and Clinical Committee; that the new Special Committee would be provided with funds; and that arrangements would be made later for co-operation between it and the Research and Clinical Committee.

MOTIONS INVOLVING EXPENDITURE OF FUNDS (BYE-LAW 99).

The PRESIDENT said that under this head were a grant to the Research and Clinical Committee, and a grant to the Library Committee, which had been passed. He asked what grant the new Committee on Mental Deficiency would require.

Dr. DOUGLAS TURNER said that Committee needed up to £100. [**Agreed.**

DATES OF QUARTERLY MEETINGS OF THE ASSOCIATION AND OF THE COUNCIL.

It was agreed that the provisional dates of quarterly meetings should be November 21, 1933; February 22, May 17, 1934.

ELECTION OF HONORARY AND ORDINARY MEMBERS.

Honorary Member.

The following gentleman was unanimously elected to the Honorary Membership of the Association:

ERNEST WILLIAM WHITE, *C.B.E.*, M.B., M.R.C.P., Emeritus Professor of Psychological Medicine, King's College Hospital, London. (Ord. Member since 1884; President 1903–4.)

Proposed by Dr. R. B. Campbell, Sir Hubert Bond, Drs. Douglas McRae, Thos. S. Good, R. Worth, Wm. M. Buchanan.

Ordinary Member.

The following candidate was, after ballot, elected an Ordinary Member of the Association:

PHILLIPS, JOHN ROBERT PARRY, *O.B.E.*, M.R.C.S.Eng., L.R.C.P.Lond., Down Edge, Kingsdown, Box, Wilts.

Proposed by Drs. S. J. Gilfillan, J. P. Westrup and S. Edgar Martin.

Dr. M. A. Collins and Dr. Walk acted as scrutineers.

COMPLIMENTARY MOTIONS AND ANNOUNCEMENTS.

The PRESIDENT announced that the Gaskell Prize and Gold Medal had been awarded to Dr. Desmond Curran and Dr. Louis Minski, both of the Maudsley Hospital (bracketed as equal). The Bronze Medal and Prize had been awarded to Dr. David Neil Parfitt, Senior Assistant Medical Officer, Warwick County Mental Hospital, Hatton. The Council had agreed to award a second prize to the author of the essay under the motto "Fiat Lux", but as the envelope had not yet been opened, he was unable to announce the name of the winner.

Dr. WALK moved that the President be authorized to open the envelope, "Fiat Lux". [**Agreed.**

(It was subsequently ascertained that the author of this essay was Dr. F. L. McLaughlin, Assistant Medical Officer, Colney Hatch Mental Hospital.)

The PRESIDENT said that the Divisional Prize had been awarded to Dr. John Smith Sharpe, Assistant Medical Officer, County Mental Hospital, Stafford. The Campbell Clark Prize for mental nurses was secured by Arthur Barnett Hindson, of the Cambridgeshire Mental Hospital.

Dr. WORTH said that this year marked the 25th anniversary of the founding of the mental hygiene movement in America, and he had received a letter from Johns Hopkins University, signed by Mr. William Welch, suggesting that some fitting tribute should be paid to the founder of the movement, Mr. Clifford Beers. It was proposed to present him with a collection of opinions on the importance of the movement he started, and the value of his unique services to humanity. He suggested that, if it was agreeable to the Association, a letter might be sent from the Association congratulating Mr. Beers on the work he had done, as he was sure such a letter would be appreciated.

Dr. HELEN BOYLE seconded the proposal.

The resolution, after discussion, was carried by a large majority.

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Afternoon Session.

At the Albert Hall, Colchester.

Dr. R. B. CAMPBELL in the Chair.

VOTES OF THANKS TO THE OFFICERS AND COUNCIL.

Dr. NATHAN RAW said he had a very pleasant duty to perform, namely, to move that the best thanks of the Association be given to the Officers for their services during the past year. It was quite impossible justly to differentiate all these officers, who did such excellent work, but he thought that the retiring President, Dr. Campbell, had had a most successful time in the chair. Dr. Campbell had had the support of all the members of the Association, and the speaker was sure he would look back with great pleasure and pride on his term of presidency.

With regard to all the other officers, they had each done excellent work. He did not know whether they had enjoyed themselves quite as much as the President had, but the Association's inestimable Secretary, Dr. Worth, had done an immense amount of work, and he seemed to flourish on it. Without mentioning any others, except, perhaps, the Treasurer, who held a very responsible post, he asked the meeting to support the proposition that a very hearty vote of thanks be given by the Association to the Officers for the work they had done during the past year.

Dr. HAMILTON MARR said it gave him very much pleasure to second the vote of thanks proposed by Dr. Nathan Raw to the Officers of the Association. The President was now retiring, but he could tell that gentleman, from knowledge that he had himself, that his work was not yet ended. He had, for example, some thousands of certificates to sign—a somewhat tedious duty. The speaker agreed with everything that had been said as to the success of Dr. Campbell's presidency. All who were present had very much enjoyed the time they had last year in Stirling, and he could not think of a single thing which jarred, or marred the success of that meeting. There was little else he wanted to say about the officers generally, but he would like to refer to the very hard work which the Editors of the Journal had to carry out, especially at a time when new psychologies were coming up like mushroom growths. Real mushrooms might be very desirable, but some growths which looked like the real thing were of a poisonous species, and it must be a very hard task for the Editors of the Journal to select the work submitted them so well as members knew they had. Without mentioning any more names he had pleasure in seconding the vote of thanks which Dr. Nathan Raw had proposed.

The vote was carried by acclamation.

The PRESIDENT said he understood it was customary for the President to return thanks on the behalf of the Officers and the Members of the Council of the Association for the vote which had just been so kindly proposed, seconded and carried. He could truly say that no one was in a better position than he was to appreciate the great amount of work which the various officers of the Association did in the course of a year, and he personally was very glad that this opportunity should occur annually to express the gratitude all felt to the Officers and the Members of the Council for the work they did. To speak of himself was, of course, a rather difficult matter, but he wished to thank both Dr. Nathan Raw and Dr. Hamilton Marr for their very kindly references to himself. He would like to say at once that his year of office as President of the Association had been for him a very happy one indeed, and would remain as one of his pleasantest memories. The work which the President did was not, perhaps, very much, but he would like to say that his own work had been rendered light and pleasant by the support and the kindly consideration which had been extended to him, not only by the Officers and the Members of the Council, but by the whole Association, and he took this opportunity of expressing his gratitude to all.

INDUCTION OF FRANK DOUGLAS TURNER, M.B., TO THE OFFICE OF PRESIDENT.

The PRESIDENT said that he now reached his final official duty, namely, to instal his successor, Dr. Douglas Turner. (Applause.) Dr. Turner was well known to all the members, therefore no words of the speaker's were needed to introduce him. He was quite sure that the affairs of the Association could be safely handed over to Dr. Turner, with the knowledge that everything would be done carefully and well. He concluded: "Dr. Turner, I have very great pleasure in investing you with the Insignia of Office, and in asking you to take the chair the best wish I can give you is that your year of office may be as happy as mine has been."

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Dr. DOUGLAS TURNER in the Chair.

The new PRESIDENT said that the very first duty he had—and it was a very pleasant one—was to present to the immediate Past-President, Dr. Campbell, the Badge appertaining to that position for the work which that gentleman had done for the Association. If he had been properly educated—*i. e.*, if he had been educated in Scotland—he would have been able, in a single Latin phrase, to say all that the Association thought of its Past-President. But as he was only educated in London he had to say, in English, and in all sincerity, that the Association thanked Dr. Campbell very much indeed for the enormous amount of work he had done for the Association, and to say how tremendously the members valued that help. He hoped that Dr. Campbell would live many years yet to wear this Badge in remembrance of a very pleasant period of office.

INTRODUCTION OF FOREIGN DELEGATES.

Dr. WORTH, *O.B.E.*, introduced to the President Prof. J. H. Pameijer, Inspector of State Supervision of the Mentally Ill and of the State Mental Hospitals in Holland, and Dr. Doll, Head of the Research Department, Vineland, U.S.A.

The PRESIDENT, in welcoming Prof. Pameijer, said the Association was very pleased to see him at the meeting, because many of the members had extraordinarily pleasant recollections of a tour they took in Holland in 1928, under the visitor's direction, and of meeting him and his *confrères* in England the following year.

Prof. J. H. PAMEIJER said he must tell the meeting, in the name of the Dutch Association of Psychiatry and Neurology, that that body had charged him to represent it at this Annual Meeting, following the invitation which it had again received this year, and which was greatly appreciated. It was a great pleasure to the speaker to present to the President and the Association the greetings of Dutch colleagues, and to assure its members of their warm sympathy with its work. Personally he considered it a great privilege to have the opportunity of spending a few days in the midst of the members of the English Association. Thanks to the courtesy of the late Dr. Lord, they in Holland had been in permanent touch with prominent representatives of British psychiatry, from whom they had learned a great deal, therefore he could scarcely say he felt a stranger in their midst. It was, he considered, a very fortunate circumstance that the meeting was taking place in this town—a great mental defective treatment and training centre; the work done in Colchester was known to all Dutch and English psychiatrists, as setting an example which all would like to follow. Members of this Association could rest assured that Dutch psychiatrists followed with interest and sympathy the work being done in England.

The PRESIDENT said that Dr. Doll was known by reputation and by his writings to a good many members of this Association, and he would find in this Association a very warm welcome indeed. It was at Vineland that the work in mental deficiency was started, and some of the foremost work in the world on that subject had been done there.

PRESIDENTIAL ADDRESS.

The PRESIDENT then delivered his address on **"Mental Deficiency"** (*vide* p. 563).

Dr. CLARKSON said he hoped the President would allow him to try to thank him (the President) for the address to which they had just listened. He did not know when he had enjoyed an hour so much, especially the half-hour when the lecturer was airing his theories, because they had also been his own for a matter of thirty years, though he had not succeeded in getting the medical profession or the scaremongers among the philanthropists to believe there was any truth in them. He was extremely glad that the President had taken the opportunity of telling the truth, because much of the contents of this address would probably reach the public; perhaps even the medical profession would now begin to believe that mental deficiency was not one extraordinary disease, and might also cease to imagine that when they had to deal with a mental defective they were safe in telling the parents that something would happen at 7, 14 or 21 years of age. The practical details which Dr. Turner had given as to the plans on which institutional policy should be based would take a lot of thinking out. The variety found in the field of mental defect was probably even greater than in that of those who were nearer the peak of normality. Though for many years one could see this constant flow inwards and outwards at the institutions, there were bad mental defectives, just as there were bad supposed normals. The problem of the bad mental defective was one standing by itself, and for these, institutions would constantly be required. Those in England were fortunate in having State provision for these incorrigibles, and that was perhaps the only bit of the scheme which the President had omitted in his address, which, however, constituted an admirable outline of the subject.

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He felt that the Association owed a great debt of thanks for the address, and he hoped that the ladies and gentlemen present would show in an unmistakable manner the appreciation they felt.

Dr. REES THOMAS said that in spite of the approval already shown by the meeting he rose to second the proposal of thanks to Dr. Turner for his extraordinarily fair paper. There was one thing which the new President had taught medical men as well as lay people: that clarity of thought was the only thing in working out a scheme of this sort; and those who were acquainted with Dr. Turner's work knew that he was one of the leaders in the almost successful attempt to socialize the defectives of the higher grades. Dr. Clarkson had referred to the bad defectives, but Dr. Turner had no bad defectives. He, the speaker, knew of a very bad defective, and he sent him to Dr. Turner in preference to anybody else.

Sir ROBERT ARMSTRONG-JONES asked to be allowed, as perhaps the senior Past-President at the meeting, to join in thanking Dr. Turner for his very able and very practical address. Dr. Turner was recognized as an authority and an eminent leader in the subject of mental deficiency. Essex Hall, the original designation of the Royal Eastern Counties Institution, was the pioneer in this work, and it continued to be the leading and most comprehensive training school in the country. He, Sir Robert, had had the privilege of knowing its first principal and teacher, Mr. Miller, and the first superintendent and secretary, Mr. Turner, the respected father of their President. Some of their first patients were transferred to Earlswood in 1857 to the care of Dr. Langdon-Down, who was followed as superintendent by Dr. Grabham, the speaker's immediate predecessor at Earlswood. It was there also that Dr. Shuttleworth received his first training in the education, care and treatment of mentally deficient children. He would like to pay a tribute to those who looked after the defectives—the staff of the institutions; they were kind, tender and attentive, and were imbued with a thoroughly Christian spirit.

Dr. Turner's address would undoubtedly stimulate further research in a field which at the present time was engaging the interest of the public as well as of the profession.

The vote was carried by acclamation.

The PRESIDENT briefly returned thanks.

GARDEN PARTY AT SEVERALLS MENTAL HOSPITAL.

After the meeting members and guests attended a Garden Party at Severalls House, at the kind invitation of the Visiting Committee of Severalls Mental Hospital and of Dr. and Mrs. Turnbull. The Hospital and grounds were open for inspection throughout the afternoon.

THE ANNUAL DINNER.

The Annual Dinner was held in the Grand Hotel, Clacton-on-Sea, the President occupying the Chair. The guests included the Rt. Hon. Sir Edward Hilton Young, *G.B.E.*, *D.S.O.*, *M.P.* (Minister of Health), The Viscount Dunwich, the Rt. Rev. The Lord Bishop of Chelmsford, The Lord Huntingfield, Sir T. Courtenay Warner, Bart., *C.B.* (Lord Lieutenant of Suffolk), Colonel Sir Francis Fremantle, M.D., *M.P.*, Sir Henry Brackenbury, M.D., LL.D., L. G. Brock, Esq., *C.B.* (Chairman, Board of Control), P. J. Pybus, Esq., *C.B.E.*, *M.P.*, Oswald Lewis, Esq., M.A., *M.P.*, Maurice Pye, Esq. (Mayor of Colchester), Prof. J. H. Pameijer, Dr. E. A. Doll, W. Gurney Benham, Esq., *J.P.*, and Frederick Wagstaff, Esq., *J.P.*

TOASTS.

The toast of "The King" having been honoured—

Sir ROBERT ARMSTRONG-JONES, *C.B.E.* (Past-President), in proposing the toast of "The Health Services", coupled with the name of Sir E. Hilton Young, Minister of Health, summarized some of the health services under the immediate survey of the Minister. He added that amiability was at its maximum towards the end of a feast, and it was then that claims might be most favourably presented. They had two pressing requests to prefer. The first was that their nurses' training and certificates might be recognized for State Registration. The second that the "block grants" in support of the mental hospitals made by the Ministry might recognize especially the research work that was being carried out in the laboratories of the mental hospitals. They were delighted and honoured to welcome the Minister of Health, as a member of the General Medical Council, the first layman ever appointed. His wisdom, tact and great administrative

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knowledge had been brought in at a moment of great tension. They would like, very respectfully, to reassure him that he had their most cordial support.

The Rt. Hon. Sir E. HILTON YOUNG, *G.B.E., D.S.O., M.P.* (Minster of Health), in responding to the toast, said: Mr. Chairman, my Lords, Ladies and Gentlemen,—I thank you for the kind, the too flattering terms in which Sir Robert Armstrong-Jones has coupled my name with the toast of those services, greater than any personality, with which I have the honour to be associated. As regards the latter part of Sir Robert's speech, in which he improved the shining hour—(Laughter)—let me remind him that the post-prandial period is suffused, no doubt, by an increased geniality, but it is signalized also by a prolonged reaction time, and it may be that he will not be surprised if the reaction to his charming request is so long that it does not produce a definite reply on the present occasion. But there is only one of those many high tasks to which he referred to which I would disclaim some sort of responsibility. He referred to it as my duty to provide accommodation for mental defectives; I remind him that the House of Commons is in the hands of the First Commissioner of Works. (Laughter.)

My first thoughts to-night must turn to the relationship between the mental health services and the health services generally. The mental health service may claim to be one of the oldest of the public health services. I think the Royal Prerogative was exercised with regard to the care of those suffering from mental ailment as early as the fourteenth century, and statutory provision began to be made as early as 1743; and in 1845 an Act was passed which imposed upon Justices at Quarter Sessions a duty to make provision for the mentally afflicted and established a permanent central supervising authority. That was thirty years before the passing of the Public Health Act of 1875, to which we all look back as a Charter. Superintendents of mental hospitals may not unreasonably look upon the medical officers of health as of mushroom growth in comparison with the antiquity of their service. But there is a growing consciousness of the importance of a closer alignment between the mental health services and the public health service. Improved facilities for advance in this direction were provided in the Mental Treatment Act of 1930, the effect of which may be far-reaching when the present stringency no longer hampers development, and when the medical profession has learned to make full use of the opportunities which the measure provides for ensuring the treatment of incipient mental disorder without certification.

Let me illustrate, from my experience, what can be done if the Mental Treatment Act is widely applied. I will quote you the following figures from the first six months' working of the Swansea Mental Hospital. Omitting 49 certified cases transferred from a poor-law institution, there were 111 direct admissions to that mental hospital. Of these, no fewer than 57 were voluntary patients—(Applause)—17 were temporary patients, and only 37 were admitted under certificate. That is to say, 66% of the patients were admitted to care and treatment without recourse to certification. (Applause.) This was due, in large measure, to co-operation between the medical superintendent and the medical practitioners in that area. In the last resort, progress in these questions turns on instructed medical opinion. It is here that your great Association, I think, is doing invaluable work, in two respects, as it appears to me. First of all, in keeping alive the scientific spirit within the specialty of psychological medicine; secondly, keeping that specialty in touch with the wider field of medical practice and knowledge.

An Association like yours can counteract the inevitable tendency of psychiatry to bifurcate into two water-tight compartments, one of them concerned with mental disease, the other with mental deficiency. We can trace the origins of this unduly sharp division very far back in history; perhaps to the Statute of Prerogatives in 1300, which drew a distinction between natural fools or idiots on the one hand, and those, on the other hand, "that before time hath had his wit, and happen to fail of his wit". In these high tasks of your Association you are fortunate in one respect in the coming year, namely, in the choice of Dr. Turner as your President. (Applause.) Your Association, I think, is to be congratulated on the recognition of his distinction in the profession which you serve, and of the importance of mental deficiency work at the present time as a branch of psychological medicine. (Applause.) It appeals to me for a particular reason, because, in some way, the health services for mental deficiency have the element of novelty, though the other branch has its traditions; it is one to which the Nation is reaching forward, and conquering a new province of good organization and service to the community and it is possibly on that branch of the work that the attention of administrators falls with particular impact at the present time.

Of course the practical problems of day-to-day administration in a mental deficiency colony are, in many respects, very different from those arising in a mental hospital, but the inevitable difference in detail should not obscure the essential unity of psychological medicine—(Applause)—and it is reasonable to hope that a more intensive study of mental defect may throw light on many of the unsolved problems of psychiatry. In this connection I should like to refer again to the invaluable research work done by Dr. Turner and Dr. Penrose at the Royal Eastern

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Counties Institution for the Darwin Trust; and I also express gratification at the recent benefaction of Mrs. Burden, which will provide for further research work at Stoke Park Colony.

To illustrate further the unity of this branch of medicine, I might mention two other matters which have recently come under my personal notice at the Ministry of Health. In connection with the recently appointed Committee on certain problems relating to sterilization, it was found essential, when drafting terms of reference, to make sure that in examining the rather esoteric problem of the transmission of mental disability the Committee should have regard both to mental disorder and to mental deficiency. And, in the second place, in the purely practical problem of making the most economical use of institutional accommodation, it has been necessary to urge local authorities to review certain types of cases in their mental hospitals, so as to see whether they are not defectives who could be transferred more appropriately to a mental deficiency colony. So I hope that with time and more accurate knowledge, a sound classification and a better administration will be evolved.

Turning now to the second point which I mentioned, while your Association can do so much to preserve the unity of psychological medicine, it can also render service by ensuring that psychiatry shall not be divorced from general medicine. After all, psychiatry is only part of medicine as a whole. I myself, in carrying the responsibility for the health services, am specially concerned with this aspect, that it shall be borne constantly in mind. The Mental Treatment Act, which provides that certain types can be treated in mental institutions without certification, also provided that they might be treated in general hospitals approved for the purpose. General hospitals have not availed themselves of that opportunity to the extent that they might have done. Medical opinion—and probably only medical opinion—can bring the necessary quickening influence to bear to stimulate hospitals, especially the teaching hospitals, to seek approval under the Mental Treatment Act, because these hospitals cannot be regarded as covering the whole field of medicine until they include specific treatment for the mentally sick. It is to be hoped that medical opinion, organized by your Association, will press for more instruction in psychiatry as part of the undergraduate medical course, and, in particular, for practical demonstrations in mental defect. Many general practitioners are called upon from time to time to sign certificates, but, indeed, they receive lamentably little instruction about mental defect in the course of their medical training. Under the presidency of so distinguished a physician in this regard as Dr. Turner, the Association will be in a strong position to urge the importance of this issue. It is a fundamental, but perhaps an elementary point that the correct diagnosis and proper treatment of thousands of men, women and children hampered by mental disability depends on the efficiency of the medical practitioner.

It has given me great pleasure to be present at this gathering and to address the Association, I am glad to take the opportunity of marking my appreciation—in the discharge of the duties of my high office—of the work which you are doing in maintaining and developing the interests of psychological medicine, both as an essential unit in itself, and as an inseparable part of medicine as a whole. The stimulus of such an Association as yours is bound to have a predominant and effective influence in the movement which is surely securing for the mental health service its proper place as one of our great, one of our leading health services.

Mr. P. J. Pybus, *C.B.E.*, *M.P.*, in a witty speech, submitted the toast of "The Law and Medicine". He reminded the company of the great work carried out for the Central Association for Mental Welfare by Sir Leslie Scott and Sir Henry Brackenbury, with whose names the toast was coupled.

The Rt. Hon. Sir Leslie Scott, *K.C.*, in responding to the toast, said that there were two popular misconceptions about the law. One was that all lawyers were rogues; the other that no lawyers had any common sense. Lord Beaconsfield had said that the legal mind was one which delighted in showing its skill in illustrating the obvious, in elucidating the self-evident, and in expatiating on the commonplace. He thought that was rather the popular conception of the lawyer. The Royal Medico-Psychological Association represented essentially, in his view, the combination of the Law and Medicine which formed the subject of this toast. The Law and Medicine were together engaged in the administrative work of dealing with the whole vast problem of mental trouble, and the one could not do without the other; they were a partnership in good work for the sake of the community. (Hear, hear.) The Association represented research work and scientific thinking on the problems involved. The doctor was responsible for the diagnosis and treatment of the individual patient, and for advising the lawyer, or at any rate the man who made the law, as to the legal provisions which were essential to enable the social problems of mental disorder and mental deficiency successfully to be solved. The lawyer in this problem was concerned with advising and framing the difficult provisions of the law, which were essential in order to deal successfully with this problem and others in a way that was consistent with the cardinal principle of England, the liberty of the subject. The success with

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which they dealt with the problem depended on the wise and cordial co-operation between the law and medicine. They knew of cases of extreme hardship against doctors who, exercising reasonable skill and care, coupled with profound sympathy for the patient, and perhaps for the patient's family, had deprived an individual of liberty, and were held responsible afterwards in an action for tort. Now, since the Act of 1930, those tragic and gross injustices to members of the medical profession were less likely, and, he hoped, impossible. (Applause.) But let them not forget that the principle of the liberty of the subject was a right one—just as right as was due care for a person unable, mentally, to look after himself or herself. The moral of it seemed to him to be that they must keep rigorously within the law, never allow themselves to be deflected by sympathy for the individual case, and carefully make up their minds that if there was a case which was not within the law and that ought to be within the law, they would educate public opinion so that it might achieve the reform of the law. On that the Royal Medico-Psychological Association was a great educative power in the country, and the Law and Medicine might both look with hope to the assistance of the Association.

They had always to bear in mind in these matters the probability of confusion of mind arising, leading to erroneous conclusions. There was a great deal of misunderstanding in the public mind about all these subjects, and let none of them forget it. The Society of which he had the honour to be President, the Central Association for Mental Welfare, dealt with the practical side of these problems; they knew the human side of the subject, and believed they were doing good work aided by their affiliated societies throughout the country. It was a practical problem, for which volunteers were wanted; it was a problem which all the authorities with statutory obligations and functions had to combine to help. It was a problem on which further legislative reform would ultimately be necessary. The Law and Medicine were essential partners in this business.

He had had twenty years of association with the President, and it was an immense pleasure to speak at a banquet presided over by him.

Sir HENRY BRACKENBURY, LL.D., also responded. After thanking Mr. Pybus for the pleasant and genial manner in which he had proposed the toast, he mentioned his delight at being able to join in celebrating the presidency of his friend, Dr. Douglas Turner. He had often emphasized the importance of psychological medicine first in medicine, next to the law, and next to the State. He would not repeat what he had to say elsewhere in that regard, because that would be underlining something which their very existence underlined. But elsewhere it was still necessary to emphasize, even to medical audiences, the overwhelming importance of psychological medicine in its relation to medicine in general. And it was of very great importance to the law, as Sir Leslie Scott had just said. They recognized that to establish and maintain certain principles of jurisprudence and justice was absolutely essential to the life of any civilized community; but they did want always, from their point of view as doctors, to feel that the law in establishing and maintaining those principles, had its sympathies extended to the individual whose case they were judging. And to the State it was, of course, equally important. The State should not move in these questions without the fullest advice from the law and medicine about the subjects with which they had to deal socially or legislatively. Yet there were those who urged legislators and administrators to take action without the fullest knowledge which the law and medicine could place at their disposal.

With such problems as they had to deal with in psychological medicine, and especially in mental deficiency, it was the business of the medical profession primarily, before the law took hold of it, and before the State acted, to indicate the nature of the problems concerned; next, it was the duty of Medicine to define the problems concerned; thirdly, it was the duty of Medicine to correct any exaggeration of the problems concerned. In that respect just now the position of Medicine was fundamental and paramount.

Dr. W. G. MASEFIELD, in proposing the toast of "The Guests", said that members had assembled primarily for psychological study; and it had been the custom of incoming Presidents to choose certain guests who might prove worthy subject for study and scrutiny. Their President to-night looked on psychological study from a slightly different angle to others; and so he had chosen as guests those who from birth or from an early age had shown outstanding ability in looking after their own affairs and the affairs of others. (Laughter.) After welcoming the visitors from abroad, Dr. Doll and Dr. Pameijer, he referred to the presence of several members of the Board of Directors of the Royal Eastern Counties Institution, a board that, unlike some, paid wonderful dividends in the shape of the happiness and cheerfulness of those under their care. He gave humorous sidelights on the careers of Lord Dunwich and Mr. Oswald Lewis, *M.P.*, and, referring to Mr. Arthur Porter, Chairman of the Essex County Council, he gave several convincing examples of the "enlightened and aggressive" activities of that body.

VISCOUNT DUNWICH and Mr. OSWALD LEWIS, *M.P.*, responded to the toast.

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Sir FRANCIS FREMANTLE, in proposing the toast of "The Royal Medico-Psychological Association", emphasized the dual responsibility of the profession to society, on the one hand, and the individual on the other. He hoped Parliament would give them increasing credit and increasing powers to deal with their difficult subject. He recalled old associations with the President, as students at Guy's.

The PRESIDENT, in responding, mentioned that his first knowledge of and acquaintance with mental disorder was due to Sir Francis Fremantle himself. He had on one occasion taken the place of Sir Francis as house physician during a week-end, and he had spent nearly the whole of the 48 hours he was on duty in running up and down stairs in response to urgent calls in a case of delirium tremens. He again thanked members for the compliment which they had paid him, and the other members of the Association who worked in this particular branch of mental disease, in electing him their President.

Between the speeches Mr. Herbert Collins, a past-president of "The Magic Circle", gave some humorous examples of his skill, Mr. Ernest Hastings entertained with conjuring tricks, and Mr. Tom Kinniburgh sang three songs.

Thursday, July 6.—Morning Session.

At the Royal Eastern Counties Institution, Colchester.

The PRESIDENT in the Chair.

PAPER.—"The Interaction of Heredity and Environment," by Prof. LANCELOT HOGBEN, D.Sc., F.R.S.E. (*vide* 590).

The PRESIDENT said he was sure that all present felt tremendously grateful to Prof. Hogben for having come down and tried to bring their knowledge of genetics up to date, and to make them think about these questions of heredity and environment. He realized that he, the President, was one of those effeminate people who had virile opinions about a thing for which he could give very little scientific basis. But he certainly did gather some comfort from Prof. Hogben's remarks on the importance of environment. On the other hand, those who favoured the importance of heredity might also have derived some comfort from what Prof. Hogben had said. It was an extraordinarily interesting and complicated subject, and he thought there was an inextricable mixture of environment and heredity in everything.

Sir HENRY BRACKENBURY said he would like to re-echo the President's words of thanks to Prof. Hogben for his interesting address.

He wished to ask one question. The Professor had spoken of the cure, or the possibility of the cure, of simple primary amentia. He, the speaker, would be very grateful for some little elucidation of that statement. He could understand the possibility of preventing simple primary amentia in certain circumstances, but he had not hitherto been able to envisage the conditions which would enable one properly to speak of the cure of a simple primary amentia at any stage when one was able to discover its existence in the human being.

Sir HUBERT BOND said that the note which was dominant in his mind was the very great advisability of a little patience, for waiting for those who, like Prof. Hogben, were evidently unravelling some matters which were of the utmost importance to the work of the medico-psychologist.

He felt confirmed, also, in another point of view, which he had expressed fairly often—that if only members of his profession, when called upon to examine this or that bodily abnormality, would make inquiry into the so-called heredity of the condition with just the same regularity and terrier-like keenness as most psychiatrists did when they were called upon to examine a case of mental disorder, the whole of the profession's perception of these matters and the whole attitude in regard to them would be revolutionized.

He also thought that much of the dread of heredity in mental disorder would be dispelled His own branch of the profession could cause much harm and suffering by dilating so very much on the hereditary side of mental disorder.

Dr. LINDSAY said that, like the President, he had felt a little flattered by Prof. Hogben's address, because he had held for a long time a belief which was now put, in this address, into

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scientific language. Those who came from Edinburgh would remember that a saying was current there that no distinguished physician, and no distinguished surgeon, ever had a son who became a distinguished physician or surgeon. He thought that facts like this were due to changes in the environment—the father had got on and succeeded, and this fact caused him to set for his family a standard of luxury or to give them a luxurious environment. Sometimes the first member of a family got on well because his father had not been able to bring him up with the same degree of luxury as was the case with the other members of the family whose birth occurred after he became more prosperous. Hence one sometimes saw that the third and fourth sons of a family went "to the dogs". He was sure many members could think of examples of this which they had seen, and reflection on them gave cause for hope.

Like the President, he saw possibilities of doing something in their specialty of mental deficiency, by trying to bring about alterations in the environment.

Prof. HOGBEN, in reply, said that his object in contributing this paper had not been to strengthen the feeling of those who disliked the laying of special emphasis on a study of heredity or a study of environment in connection with mental phenomena. The point he had been at some pains to labour was that it was becoming increasingly evident that an enlarged view of the rôle of the gene in development was necessary in a study of heredity, if that study was to advance; and this advance in the study of heredity could not be gained without a closer study of environment. Neither could the study of environment be advanced without a closer study of heredity, of the hereditary materials available. The two kinds of inquiry must always go hand in hand. And though the results of modern inquiries were not to make workers distrust the possibility of utilizing genetic knowledge when it was obtained, yet one could certainly say that selection was no more a universal panacea when it was not fortified by exact knowledge of hereditary mechanisms, than was philanthropy when it was not supported by scientific knowledge of environment.

With regard to the question which Sir Henry Brackenbury put to him, when he, the speaker, used the word "cure" he used it as a purely theoretical possibility, without any particular relevance to immediate likelihood. For instance, if a man had both eyes knocked out in an accident, one would be disposed to regard it as incurable, but when one took into account the fact that it had been possible to graft the eyes of one into the eye sockets of another in the case of the newt, and obtain regeneration of the optic nerve back into the brain, one was entitled—as a very long and large view—to entertain the possibility that it might one day be possible to graft the eyes of a monkey into the eye-sockets of a human being, with similar results.

One always had to remember, when discussing some of these problems, that though the possibilities of achieving results by investigating the likelihood of being able to control the environment might be somewhat remote, there were many contingencies in which the possibilities of achieving anything by the application of genetic knowledge, even when we had that genetic knowledge, were also remote, so it was necessary to balance things up. And he could not say, as a general rule, whether the application of genetic knowledge or the control of the environment was the best way of dealing with the situation. Advancement in the matter of the study of heredity in mental disease had been held up by the strong desire evinced by people to apply knowledge before they were quite sure of possessing it.

He wished to thank the speakers for their very kind remarks. He always approached the members of the medical profession with timidity, the timidity of the average man, not being himself medically qualified.

PAPER.—"Juvenile Types of General Paralysis," by R. M. STEWART, D.P.M. (*vide* p. 602).

The PRESIDENT said that members were very grateful to Dr. Stewart for having given the Association this very clear and interesting picture of juvenile general paralysis. His, the President's, personal experience, had been much the same as Dr. Stewart's. He had found two types, in the way Dr. Stewart described; and he was certain that during the early years of his work, there were cases missed in diagnosis, because those in charge did not appreciate the possibilities.

Dr. BLAIR said he had listened with very great interest to Dr. Stewart's paper; he always read with pleasure what that gentleman wrote. He wished to ask a question on what was really a side issue. Dr. Stewart dealt with some cases of juvenile general paralysis associated with Fröhlich's syndrome, and the speaker wondered whether he had formed any opinion as to whether this condition of Fröhlich's syndrome was due to the same cause as the general paralysis. In other words, did the syphilitic virus alter the anterior lobe of the pituitary? He would like to know whether Dr. Stewart had formed a definite opinion on that.

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Dr. STEWART, in reply, said that syphilis, no doubt, did attack ductless glands, and frequently; he possessed a beautiful slide showing spirochætes in the suprarenal gland in a patient with the adult type of general paralysis. He supposed it was safe to assume a similar mechanism in Fröhlich's syndrome. Students of the subject should try to seek a cause further back than the pituitary, should try to regard the pituitary as the servant of the hypothalamus. In juvenile general paralysis the central nervous system suffered heavily in all parts, and he thought one would be on safe grounds in assuming that gross changes attacking the hypothalamus would be found if looked for. It was an interesting point to work at.

LUNCHEON.

On Thursday a large gathering of members and visitors were entertained to luncheon in the Moot Hall, Colchester, at the invitation of Colonel the Earl of Stradbroke and the Directors of the Royal Eastern Counties Institution, Colchester.

Lord STRADBROKE occupied the chair, and proposed the toast of "The Royal Medico-Psychological Association". He related something of the history of the Royal Eastern Counties Institution, and paid a tribute to the kindness and support which had been given by people throughout the county and country; he mentioned especially the assistance given by the Ladies' Association, who collected large sums of money in subscriptions, and finally the magnificent work done by the Turner family. From the earliest days the late Mr. and Mrs. Turner undertook the management of the Institution; they did all the work in the most thorough manner. And when, in due course, the late Mr. Turner passed away, it was with immense satisfaction that they who were responsible for the management of the Institution found that, with a certainty of success they were able to place the Institution into the hands of the man who was now President of the Association. They naturally felt some little reflected glory when they learnt that he had been made President. Major Turner, his brother, had also been indefatigable in looking after the Institution.

Dr. WORTH responded.

The MAYOR OF COLCHESTER (Mr. MAURICE PYE, *J.P.*) welcomed the Association to Colchester, and gave some account of the town's many historical associations.

INSPECTION OF THE ROYAL EASTERN COUNTIES INSTITUTION.

During the morning, members inspected the Royal Institution, particularly the workshops, and in the afternoon there were demonstrations of drill, games and recreation in the recreation hall and the grounds.

The workshops were hives of industry, and throughout the Institution one received the impression of industrial content, which was very pleasing. The handicrafts included shoe-making and repairing, tailoring, mat-making, weaving—by both hand and power looms—sash and cord making, carpentering, brush making, etc.

In the large recreation hall the boys and girls showed their capacity, according to grade, in various exercises, and on the stage the girls of the Upper School gave a well-presented entertainment, in suitable costume, complete with the regulation fairy queen, entitled "Knotty Knots".

Favoured by a delightfully sunny day, the Institution Guides, Scouts and gymnasium teams, aided by the brass band of the school, gave a demonstration of dancing and exercises, to the evident appreciation of the large company of invited spectators.

Friday, July 7.—Morning Session.

At the Town Hall, Clacton-on-Sea.

The PRESIDENT in the Chair.

PAPER.—"Community Control of Mental Deficiency in the United States," by EDGAR A. DOLL (*vide* p. 578).

The PRESIDENT said that Vineland was one of the early institutions in the States for mentally defective people, and it started very much like similar institutions in England, namely, as a voluntary effort. It had gone from strength to strength. One of the first heads was Goddard, and Porteous, the inventor of the Maze test, had worked there; and now Dr. Doll was in charge.

Dr. W. A. POTTS said he was very glad to have the opportunity of thanking Dr. Doll for his extremely lucid, well-delivered and interesting account of the present position of affairs in his

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country, and his instructive comparison with regard to the differences which obtained in the results from different parts of the world. This paper was a very valuable contribution, made at an important time, because the London County Council, in their recently issued Annual Report, dealing with mental disorder and mental deficiency, had rather unfavourably criticized the findings of the special investigation of the Board of Control with regard to the incidence of mental defect in the population. The L.C.C. suggested that, from their own evidence, the estimate of 8 mental defectives per 1000 of the general population was incorrect, but on carefully studying the Report of the L.C.C. the speaker thought there was inherent evidence that their alternative figure of 3 per 1000 was not at all justified. And though it was not impossible that the percentage of mental defectives in the population of the United States might be slightly higher than it was in this country, he, the speaker, could not think there would be such an extraordinary difference between the two countries. He thought one would be safer in accepting the Wood Report, and that this probably erred in minimizing rather than exaggerating the incidence of mental deficiency. It would be dangerous to suggest that the number in the British community was less than was indicated in that Report.

It had been very interesting to hear of the excellent results obtained in sending out patients on parole, especially the lower-grade cases. It was always a somewhat risky matter to let out on parole or licence any mental defective, and there would always be catastrophes; but with increased experience and careful consideration of each case, it would be more and more possible to make effective use of this method. It was most important that that should be done, because in every country the accommodation for mental defectives was totally inadequate, and if officers could let out a certain number after five, eight or ten years in an institution, as had been shown to be possible, both in the United States and this country, it would represent a definite advance in the solution of this very difficult problem.

The whole paper was most suggestive and interesting, and it would prove very valuable to workers on these lines in this country.

Mr. L. G. Brock (Chairman, Board of Control) said that he had listened with very great interest in Dr. Doll's paper, not only because it was extraordinarily clear and well arranged, as a survey, but because it must always be interesting to any administrator to see how the same problem had been tackled by the administration and experts of another country, and there was no other country which had gone as far as the United States had in the recognition of mental deficiency as a separate and a separable problem. As those present well knew, in most other countries, so far as the law dealt with mental defect at all, it dealt with it as part of the general lunacy system. But the United States, like England, had recognized it as something separate from insanity proper. To all interested in the subject it was of great help to see how the problem had been attacked, and to find—as one did find—that the lines upon which the work was being carried out were substantially in accord with the conclusions which had been arrived at in this country.

He had been particularly interested in the incidence rates given, and he agreed with Dr. Potts that they went a long way to confirm the estimates of the Board of Control based on Dr. Lewis's inquiry and the Report of the Wood Committee. If, so far as this country was concerned, that estimate stood in need of confirmation—he did not admit that it did, because the Wood estimate had been exceeded in some areas—then the figures which Dr. Doll had given in this present paper would go a long way towards confirming that estimate. He, Mr. Brock, thought that any estimate was always likely to be coloured by the point of view from which the problem was approached and examined, because one could look upon mental defect either as an educational problem or—as he himself preferred—as a social problem. If it were regarded primarily as an educational problem, the problem of what was going to be done with a number of children who could not be taught in the ordinary classes of our national schools or by the ordinary methods, he thought it was almost certain that people would arrive at a rather higher estimate of the number who required to be dealt with than if the problem were approached primarily as a social one—that of fitting into society a number of people who, temperamentally, and also partly because of their educational incompetence, were unable to adjust themselves to normal social requirements; in other words, those whom one could not fit into the social machine without clogging the wheels. He had wondered whether, in arriving at the figure of 1% of the population (or, as it had been stated, 10 per 1000) the United States possibly attached more weight to intelligence tests than some in this country would be inclined to attach to them as a means of diagnosis, and not merely as a means of measuring the degree of defect when the fact that defect existed had once been established on other evidence.

He thought that the value of intelligence tests could not be disputed, but he did feel that there was a certain element of danger if intelligence tests were going to be used not merely as a means of measuring the degree of defect, the existence of which had already been established, but definitely as a means of diagnosing defect; and he wondered whether there might not

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have been, in the United States, special difficulties in applying those intelligence tests because of the relatively high percentage of the population who were the children of alien immigrants. He wondered how far some of those children, though they were brought up to speak "American", were in fact coming from homes in which the parents were speaking another language. Were some of those children thinking in another language, or even in a mixture of languages? And had such a fact possibly contributed to the high figure shown by these tests in the United States during the War?

He had been very glad to hear that Dr. Doll agreed with the English view; that for the young and trainable one needed something on colony lines, and that for the older and the untrainable a simpler and less extensive form of institutional care was adequate. But while Dr. Doll's results agreed very much with those of English experience, he had been struck by the comparatively high percentage of cases in which it had been found possible to give parole; and when Dr. Doll came to reply, the speaker hoped that gentleman would be able to tell the meeting something of the means adopted in America for the supervision of that comparatively large percentage of parole patients. How were those parole cases taken care of, how were they visited, and were they liable to be recalled to the institution? Also, what was the percentage of failures?

He agreed with Dr. Doll also that, of course, the schools must, in the future, be the main "catchment area" for defectives. In this country there was a good deal of leeway to be made up; there were so many unascertained defectives above school age that some time must elapse before the workers on the subject could rely entirely, or even mainly, on the educational machinery to find how many defectives existed. But when this leeway had been caught up there must come a time when, if the machine was working properly, it would be the schools—the school medical system—which should be the means of bringing to proper notice the cases of mental defect in our midst. While the schools must be relied upon as the means of finding the defectives, he hoped that would never lead to this problem being regarded solely as an educational one, nor even primarily as such; because while, of course, it was a problem for the educationist, it was, to his mind, much more a social problem, and he thought it was desirable to get the public to look upon it as a problem, not of finding some way of inflicting the minimum of education on people who were, congenitally, ill-adapted to support it, but rather as a means of socializing people who, without medical efforts or other efforts at socializing, could never become fitted into or adapted to the community. He felt that, whatever care might be taken, however good might be the system adopted, there must be a residue of cases that must be institutionalized permanently, and the aim should be the using of our residential institutions and colonies, not only as places of permanent segregation, but as places of training, the object being to socialize and restore to the community as large a proportion of defectives as possible. There would always be people who could not be socialized, but he felt that the defectives who had to be kept permanently in institutions were the failures under the system, and that the measure of success, the real test of success, was the extent to which it was possible to get back into the community people who, without that training and that discipline, would be a social menace.

Miss Evelyn Fox (Central Association for Mental Welfare) said she would not like to allow this opportunity to pass without expressing her thanks to Dr. Doll for this extraordinarily interesting paper. She had enjoyed the opportunity of visiting Vineland, and she was disappointed that Dr. Doll was not there on that occasion. But she was struck, as all had been who paid the visit, with the generosity with which the visitors were shown everything that was being done, and the great lines of their work were indicated. No one who had been there could fail to appreciate this generosity.

The main thing which struck her about the paper just read was the way in which Dr. Doll had put his finger on the difficult problems, and his description of the way in which the workers there were facing them. It was evident that there was little difference between their methods and the way in which the problems were being faced in this country. They, in England, were groping forward on this question of community control of mental defectives, and they had to seek outside the narrow limits of mental deficiency work for some of the possible solutions.

Professor Doll had alluded to the dull children in the schools; she thought in England they had arrived at a rather hopeful stage with regard to that work. The reorganization of the schools into junior and senior departments had brought to the notice of the teacher, the Director of Education and the Managing Committees a whole group of retarded children, which included the feeble-minded as well as the dull. It had brought it before them in so striking a way that they had been obliged, even in the few years that the reorganizing had been going on, to make special arrangements at once in the schools for this group of children. It was from the concentration of attention on a hitherto neglected group that workers on these matters would find a source of ascertainment for the higher-grade defectives, particularly the difficult ones, which had never before been encountered in this work. That came before her in a striking way. When her Association started courses for teachers in 1915, they had 80 teachers who were all engaged

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in teaching in Special Schools; in the first three months of the present year there were 120 teachers in the courses of whom 35 were from Special Schools. About 30 of the members of the courses were head teachers of schools. That showed how extraordinarily the practical work had changed.

She was also much impressed with what Prof. Doll said about the difficulties encountered in rural districts. The same kind of difficulties were met with in this country. There, again, she thought there would be a possible solution, first in applying to such children better educational methods than were now used in the ordinary rural school, where they were divided into senior and junior schools; secondly by the adoption of the system of home teachers. That was being tried in this country, and one of the things which struck her on looking over lists of individuals to whom the home-teachers went, was how much, in a decent family, was possible, even when only a limited number of visits could be paid. And that would probably be one of the methods which would be extended in this country in dealing with defectives in rural areas.

The subject of the public health nurse was another of those which were under consideration in this country. In the areas served by many local authorities the public health visitors were organizing visits to defectives in their, the defectives', own homes. This would be successful, she thought, if an extra nurse were obtained, and this additional work was not expected of the existing nurse.

But it was interesting to see how all the workers, in both countries, were arriving at the same sort of stage in dealing with the same sort of problems, and how this problem of the community control of defectives had been borne in upon those engaged in the work. All present must feel very grateful to Prof. Doll for having put the matter so clearly and graphically.

Dr. HAMILTON MARR said that this able and interesting address showed that the human problems in the States were much the same as those which confronted workers on this subject in this country, especially with regard to mental deficiency. At the risk of wearying the meeting, he would like to say that the whole problem was best illustrated by an instance which he had frequently quoted: it was an example of what should be done in regard to mental defectives throughout their lives.

He had occasion, in the Island of Skye, to visit a boarded-out patient, a boy, æt. 14, and as he went up the hill he saw a boy, almost naked, wearing around him a broad leather belt, with a rope attached to it, and the other end of the rope was attached to a stake driven into the ground. As he passed a cottage near to the place he asked the woman of the cottage if such and such a boy lived there. The reply was, "Yes, there he is; that is the boy who is tied to the stake". The speaker, Dr. Marr, said, "Who are his relatives?" and the reply of the woman to that was "I am his mother". "Is it not cruel to tie a boy up like that, as you would tie a sheep or a goat?" "Cruel? I would not hurt a hair of his head." The woman took the speaker to the back of the cottage, and showed him the rocks running down to the sea, rising to a height of 150 ft., and added, "All my children have had to be tethered". They all had to be tethered until they learned of the dangers behind the house. The mental defectives must be "tethered"; they must remain under supervision throughout life. The length of the tether might be extended but it must always be such that the central authority could draw in the tether, and so bring the mental defective back to a position where he could be properly cared for.

It should be borne in mind that the whole problem of both mental disease and mental defect was not a public one in the ordinary sense of that term; it was an individual problem, not one which affected the health of the community in a general way as did infectious diseases. And unless the mentally defective and the insane were dealt with as individuals, he did not think that much real progress in the matter would be made.

There was also the wide problem of sterilization. Plutarch said of Diogenes that the latter told an idiot to get out of his way "because your father was a drunkard", and it was known that, to this day, children in Italy who were mentally defective were called "Sunday's children," because in that country Sunday was the great drinking day, and when the mother conceived at the time of a drinking bout it was considered probable that the progeny would be mentally defective. Would his hearers sterilize people whose parents were under the influence of drink at the time of conception? It was important that those who were studying the matter should set themselves the task of establishing a uniportal system for examination and admission to an institution, whereby children would be seen at an early age by people who knew something about the subject. The medico-psychological specialty subtended all general medicine, and was the greatest special medical field of work; and he believed, as a result of his long experience, that the knowledge of it had been built, like the house of the coney, in the rock.

Dr. DOLL, in reply, remarked that in fairness to the other speakers, he hesitated to say very much, but he would comment on the remarks already offered. He agreed with Mr. Brock that the question of mental deficiency should be determined on social grounds. The figure given

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of the incidence in the United States was a social figure, and that was the reason he quoted particularly the figure which was the finding of the Surgeon-General of the United States Army. The diagnosis of mental deficiency in the army was not based on mere psychological examination; these cases were certified by the Army Board, which was the authority for discharge, and so the criterion for mental deficiency in the army was one of social competence for army purposes. When one realized the limited degree of social adaptation required by the ordinary man in the ranks, particularly in the Army Labour Battalion in the War, it would be appreciated that this was a very low standard. The figure of 1% had been confirmed by intensive surveys.

With regard to the survey of Dr. Potts, it was well to bear in mind that people were working on different figures. One in which he was interested, for scientific purposes, was the percentage of incidence of mental deficiency, and the other was the figure to be used for commitment purposes. In his own State, where it was developed, they were committing less than one-tenth of 1%. So they worked on one figure, the total percentage in the country, and on another figure for institutional commitment. They had a means of allaying public fear as to the expense of dealing with the problem and the deprivation of personal liberty. He thought that the educational problem of mental deficiency should be faced educationally. The criterion of mental deficiency should be one of social conditions; and he thought that in the United States, and probably here, those interested would see a serious re-organization of elementary education in the first grades. The development of the junior and senior high school had only partly dealt with the problem. In the States there were 25% who could not graduate in the sixth grade in school, and it was necessary to have a different system. When mental defectives were agreed to be those who could not profit by the instruction given in the ordinary school, the school itself should change its programme so that these children could profit. The school system should be reorganized. The estimate of incidence in the States was not based on intelligence tests; if the latter were used, the result was to give a much higher percentage incidence. The intelligence level of Binet ran to 11 and 12 years, but it was found that there were many people, supposed to be on the normal level, who fell below that standard. There was a border zone between the mental ages of 8 and 12, within which it was impossible to distinguish between normality and deficiency on the basis of intelligence tests alone. That was taken account of by the speaker and his colleagues in examining the children of foreigners, and also in examining negroes. There were, in the Southern States, adult negroes of a mental age of 7 or 8 mental years, who could not be certified as mental deficients. Therefore the language problem must be taken account of by a dual system of standards in estimating the results of intelligence tests. And he would like to call attention to the important differences in incidence in the community, as arrived at in different States. In Vermont it was given as 3%, and in Arizona two-tenths of 1%.

Probably workers in England had not the same problem in regard to the supervision of parole. In the States a number of different parole systems were in operation. One of them was that known as the "extended vacation". Under that the patient could leave the institution and go home for a visit, and if such visit proved successful it could be extended indefinitely, or if it were unsuccessful the patient could be recalled. Under another system the patient was discharged to a central parole bureau, and it was somewhat similar to that of correctional institutions. Where the paroling was carefully done the percentage of failures was low. In his own institution it was done as a scientific classification, based on the entire history and record of the individual. Dr. Bernstein, in New York, whose work in the United States had not received very wide approval—though he was himself a believer in it—had a system of paroling which was more offhand than that in other States, and that authority had had rather a high degree of failure in his parole cases. But Bernstein said that if there were 100 mentally defective persons in the community who could be sent out on parole and there were 50 failures, the state of matters was bettered, as long as the proportion of paroles remained less than those who were receiving attention. In the Vineland institution population of 550, 40% were private patients, and numerically they turned over their population once in seven years. With 555 patients they dismissed 80 patients a year for all reasons, and there would be a new population in the institution once in seven years. But about 50% of the patients stayed for a long time, and the other 50% were turned over rather quickly.

He could not conclude without saying something with regard to Miss Fox's generous statement about the courtesies which were extended in the States to visitors there. He felt that they in the States could never repay the generosity of which he had been the recipient. At Vineland they were always glad to have visitors, and he brought to the members of this Association the particular invitation of Mr. Johnston, the Director of the training school, collectively and individually, to visit the Vineland institution at any time they might happen to be in the States. (Applause.)

The PRESIDENT said there were many things he would like to ask Dr. Doll, but there was only one suggestion he wanted to make. The American journal *Mental Hygiene* used to contain

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many articles on the different aspects of mental deficiency when Dr. Fernald was one of the Editors; but during the few years which had elapsed since that Editor died, they on the mental deficiency side had not received so much instruction through that Journal as they had hoped. Perhaps Dr. Doll, when he returned home, would drop a hint in that direction, for those in England who read that journal would appreciate more material in it on the subject of mental deficiency than was supplied at present.

He wished to say, on behalf of the Association, how grateful members were to Dr. Doll, who was the foremost research authority in the States on this subject, for having come over to read this paper. He expressed the hope that Dr. Doll's visit to England would repay him a little for the time taken by the visit. He was sure that those who had heard the address had enjoyed it enormously.

PAPER.—**"Cholesterol: Its Relation to Mental Disorder,"** by A. GLEN DUNCAN, M.D., D.P.M., Deputy Medical Superintendent, Essex County Mental Hospital, Severalls, Colchester (*vide* p. 626).

Dr. W. F. MENZIES remarked that he ought to begin by saying he knew nothing about laboratory methods; he was speaking of the results of experiments which had been done in cases in which there was hypocholesteræmia or hypercholesteræmia. The impression on his mind was that cholesterol had primarily nothing whatever to do with the mental state, and for this reason: Cholesterol was, like many other substances, present in the cells of the body; lecithin was particularly present in the central nervous system and in the generative organs. His view was that wherever there was a neurolysis there was a reactive protective tendency. Severe neurolysis might be very important from the point of view of conduct, *i.e.*, from one's own interpretation of mental conditions, but still the amount of lecithin and cholesterol in the brain was, in comparison with the amount in the whole body, not insignificant, but certainly small. The impression he had at present was that where neurolysis was proceeding rather rapidly there was a considerable destruction of lecithin, and that cholesterol, which decreased the surface tension in the cell, was increased in order to protect the cell; it was a secondary result of the loss of lecithin.

How was cholesterol produced? Little was known except in relation to diseases of the liver; it was known that there must be some intimate connection between the quantity of cholesterol and liver function.

What was the mechanism whereby the protective cholesteræmia was produced in the liver? The present idea was that it was produced through the activity of the thyroid acting on the liver by means of nervous influences, but it might be partly through the pituitary. It was not possible to increase the blood cholesterol beyond a certain degree, except by giving enormous doses. There was, for instance, the disturbance of the calcium metabolism in rabbits and the production of bone when enormous doses were given.

He thought that explained the present small amount of knowledge on the matter, and the Association must feel very grateful to Dr. Duncan for having made one of those very careful investigations which were the only means of making further progress.

Dr. REES THOMAS said he wished to ask Dr. Duncan one question: Whether he had also tested the effect, not of cholesterol, but of ergosterol on the depression which arose, *i.e.*, taking a parallel series of experiments. It seemed to him that Dr. Duncan was using enormous doses to bring about his effects; such effects might equally well be produced in mild degree by exposure to sunlight. Ergosterol, in certain of its effects, was eight times as active as cholesterol.

Dr. RUDOLF remarked that Dr. Duncan had pointed out that the amount of cholesterol varied in fever. Templeton, in 1923, published a series of cases of dementia præcox treated by induced malaria. Almost all the cases so treated improved markedly for three or four months, then all relapsed. In the next year the speaker started treating them, and obtained exactly similar results. So he reinoculated some of them up to as many as five times, and in each series the fever became less and less as the patient became more immune to the malaria. None of them improved after a second course of malaria, or after subsequent courses. He asked whether Dr. Duncan had any explanation of the temporary improvement if the cholesterol always varied after fever.

Dr. T. WILLIAMS said he had two questions he would like to put to the reader of the paper. He wished to ask (1) in the four cases which were described, where diminution of psychomotor activity seemed to follow definitely the exhibition of cholesterol, was there any concurrent estimation of the pH, which also had a very profound effect on the psychomotor activity? (2)

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If in the four cases showing improvement after the two doses of cholesterol the estimations were continued, whether the blood content of cholesterol was in accordance with the observations made in the physiological cases and elsewhere, modified, or remained modified during the period of remission?

Dr. DUNCAN, in reply, said that in regard to what it was that varied the blood-cholesterol physiologically, he knew of no experiments which had resulted in a settlement of that question. He thought most workers who had studied the question with regard to the changes in animals had agreed that cholesterol was kept constant more or less by the removal of small excesses of it by the liver, the spleen, and possibly other organs of the reticulo-endothelial system. The evidence for that had been very closely studied by Noble Chamberlain, and he had published a good deal of the supporting views of the French on the matter. He, Dr. Duncan, had tried to get evidence by feeding rabbits and guinea-pigs with thyroid, and then estimating the cholesterol content of the liver and spleen, but it was not an easy matter to estimate the cholesterol content in an organ, and, of course, it could only be done once on any given animal; once one had estimated the cholesterol content of an animal's liver, the effect on that liver of giving thyroid could not be ascertained. Hence it required many treated animals and many normals, and he had not had time to do that.

Ergosterol he had not tried in this connection. The statement as to ergosterol being eight times as effective as cholesterol surely meant as to its vitamin properties, as it could scarcely be eight times as potent in physical properties, seeing that one could scarcely expect ergosterol to reduce the surface tension of a cell membrane eight times as much as the same quantity of cholesterol. It seemed highly improbable that the consumption of oxygen by a cell or by tissue powder would be reduced by one-eighth of the quantity of ergosterol as compared with cholesterol, though he did not know of such work. Exposure to sunlight might raise the blood-cholesterol, but he thought that the liver would diminish it and keep it constant. It was now many years since it was shown that sunlight increased the amount of cholesterol and of ergosterol, but, as far as he remembered, the increase was largely limited to the skin, and did not take place to any great extent in the blood, and it was only an increased quantity in the blood which could be expected to have any effect on the nervous system.

Dr. Rudolf's findings of the effect of fever in dementia præcox were of considerable interest, in that the first attack of fever reduced the dementia considerably. But after that, as the quantity of cholesterol rose, the patient became duller, and a relapse occurred. But what happened after fever occurred also after thyroid. One stopped the thyroid, and the blood cholesterol rose to a degree higher than originally. After a malarial attack a second attack of fever should reduce the blood cholesterol somewhat, but it could not reduce it as low as the first attack did.

Cholesterol was not a cause of excitement. The patient became excited for psychological reasons, and as a consequence of that excitement the blood cholesterol fell. But that did not prevent one from trying to raise the patient's blood cholesterol, and so using the material as a sedative. The pH value of the blood he had not ascertained in connection with these investigations, largely, because the medical officer of a mental hospital must regard the laboratory field as an amusement and recreation, and the time that could be given to it must be as much limited as that given to golf and tennis.

With regard to the patients who showed some improvement after cholesterol injections, he did not proceed with further estimations of their blood-cholesterol, except in one or two cases. Some of them were so much improved that they proceeded to the convalescent villa and were getting ready to go home; and he did not want to take any steps which might possibly retard their progress. In fact, he accepted the findings of Harrison Lipkin, who did perfectly reliable work with injections of cholesterol, showing that they did raise the blood-cholesterol value.

The PRESIDENT said members would wish him to thank Dr. Duncan very much for his address. He appreciated the immense amount of work that the preparation of the paper must have involved, covering as it did an investigation over a number of years.

PAPER.—"Emotional Factors in Mental Retardation," by EMANUEL MILLER (*vide* p. 614).

The PRESIDENT said that owing to the exigencies of time, Dr. Miller had had to omit portions of his paper. When one had a fixed point of view, as he, the speaker, had, the tendency was to pick out, in everything heard, the things which underlined one's own point of view, forgetting the things which did not emphasize that view. Dr. Miller's paper seemed to bear out what he, the President, had tried to put into his own address, namely, the important point that affective disturbance acted as an inhibitory effect on the intelligence output, and the effect of environment

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in that way could produce deficiency, or difficulty in conduct, sometimes not as low as certified defect, but more on the borderline. Dr. Miller was a very distinguished man in the child guidance world, and the Association was very grateful for his paper.

VOTE OF THANKS FOR HOSPITALITY.

The PRESIDENT proposed a vote of thanks to those who had helped to make the meeting a success, and, if approved, he would ask the General Secretary to write official letters of thanks to the Chairman of the Clacton-on-Sea Council, who had so kindly allowed the use of their Council Chamber, and to the Mayor of Colchester, for having allowed members and their guests to have the use of the Moot Hall for the luncheon, and of the Albert Hall for the proceedings on Wednesday.

He also wished to say how much the presence had been appreciated of three distinguished representatives of other nations: Dr. Doll and Dr. Williams from the United States, and Dr. Pameijer from Holland.

Dr. CAMPBELL said that in proposing this vote of thanks to those who had helped to make this Annual Meeting such a success, the President, while naming the officials, had carefully avoided all reference to the prime mover, Dr. Turner himself, who had contributed so very largely to the enjoyment attached to this delightful series of meetings. The day spent at the Royal Eastern Counties Institution on Thursday was probably one of the most enjoyable the Association had ever experienced. Frankly it was to him an eye-opener to see the excellent work being carried on at the Institution. He wished to express the thanks of the members specially to Dr. and Mrs. Turner for the very kind hospitality they had extended to all, fully appreciative of the immense amount of work these preparations entailed. The arrangements had been made in a masterly manner, and, as a member remarked to him, it was "excellent staff work". The whole meeting had been a huge success—an opinion he was sure was shared by all who had participated in it. (Applause.)

Prof. J. H. PAMEIJER said: Permit me, Mr. President, to seize the opportunity afforded by the end of this meeting to say a few words.

It is for me more than a formality to fulfil what I have in mind; it really comes from my heart, for I wish to thank you and the members of your Association for your excellent receptions of us at these meetings, and at the same time to show you of what great importance the social problems that have been discussed here are to ourselves also in Holland.

I have in view the application of your Mental Treatment Act of 1930, and the effect of your Mental Deficiency Act of 1913.

As to the Mental Treatment Act, as a consequence of a corresponding mentality which our country has in common with yours, until recently an order by a magistrate was required for each admittance, and in the mental hospitals there were only certified patients. Now, in our country, at the mental hospitals, so-called open wards have been established as separate sections. The admittance in such wards does not involve any order by a magistrate. As far as I can judge, those admitted in these sections correspond in many respects to your voluntary and temporary patients. Now, in order to answer the question as to whether we are on the right track with our open wards, it is very interesting for us to observe the application of your new system, and in particular to examine what will be the proportion of the number of certified and uncertified patients in the long run. In our country there are a number of people, especially medical officers of the institutions, who are of opinion that only for a relatively small part of the inmates of the mental hospitals is a certificate wanted.

Next your Mental Deficiency Act. Let me begin by assuring you that in Holland we sincerely admire the scientific and practical organizing work that has been carried out in this domain in your country, particularly during the last decennium. As to the British scientific papers about mental deficiency, many of them have been studied seriously in my country, and as to Dr. E. O. Lewis's inquiries, an account of which has appeared in the Wood Report, they also are generally known in Holland. I may say that we have reason to be jealous of your Mental Deficiency Act. I gather from the discussions of this morning that in this country, and it is so in the United States too, you see the problem of mental deficiency as a separate one, especially separated to a certain degree from the problem of dealing with the mentally ill. The problem is, in its whole extent, treated in a prophylactic manner, and your more preventive working method forms a great contrast to the more repressive measures in the continental countries, including my own. It seems to me, also, these countries will be compelled in the end to follow the more preventive direction in the fight against mental deficiency. They will then derive the greatest profit from your experience.

The whole of your provisions, including, as they do, the ascertainment of the number of

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mental defectives by the local authority, the admittance to colonies, the community care and supervision, must be considered as a measure of real mental hygiene.

Reading in the last annual report of the Board of Control the chapter about mental deficiency, I was astonished at the development which has taken place in colony nursing, as well as in community care, but especially it struck me that in spite of the now prevailing economical difficulties, there was a firm desire to arrive at further developments in accordance with the scheme of the law. I sincerely hope that those who occupy themselves with this work—and I say this especially with a view to your own work, Mr. President—will come nearer to the ideal they aim at. With respect to scientific and social work there are fortunately no barriers, and others will, no doubt, profit by that which you have attained.

During the last few years, Mr. President, we, in Holland, have experienced great interest in your work with respect to the manner of nursing in our mental hospitals. The more active treatment of the mentally ill has evidently attracted several among you. It was a great honour to us to be visited this year by the Chairman and several Commissioners of the Board of Control. The interest shown by the representatives of this important body and by other visitors was a great satisfaction to us. It fortifies our expectation, that the methods that are being applied with us will influence your institutions, and as is the case with us, will contribute to the improvement of the position of the patients. I need not say that any of you who would like still to come over to my country can be sure that we will receive you with the greatest pleasure.

Permit me also, on behalf of the Dutch Association for Psychiatry and Neurology, to present to your Association our best wishes for its further life, and to express the hope that the excellent relations between our Associations will continue, certainly to the end of our days. (Applause.)

The PRESIDENT expressed his gratitude and that of Mrs. Turner to members for the very kind vote, and thanked Dr. Pameijer, on behalf of the Association for his kind remarks.

In the afternoon members were entertained by the President to a motor coach drive to Felixstowe, where tea was provided, and to the Constable country.

SCOTTISH DIVISION.

A MEETING of the Scottish Division of the Royal Medico-Psychological Association was held at Roxburgh District Mental Hospital, Melrose, on Friday, June 2, 1933.

There were present: Drs. Douglas McRae, J. H. Macdonald, W. D. Chambers, C. J. Shaw, T. F. Rodger, D. C. Dewar, Thos. Dymock, P. Steele, Donald Ross, W. M. Ogilvie, Neil T. Kerr, J. H. C. Orr, W. M. Ford Robertson, R. Mary Barclay, R. B. Campbell, H. C. Marr, T. C. Mackenzie, Reginald Bailey, Thos. Junor and W. M. Buchanan.

Dr. J. H. Macdonald, Divisional Chairman, presided.

The minutes of the previous meeting were read, approved and signed by the Chairman.

Apologies for absence were intimated from the President-Elect, Drs. Dunlop Robertson, C. A. Crichlow, Angus Macniven, Constance Hunter, Alex. Dick, W. Boyd, A. Ninian Bruce, D. J. Forbes, Ronald Stewart, R. D. Hotchkis, C. C. Easterbrook, Dods Brown and Sir Arthur Rose.

Drs. C. J. Shaw and C. G. A. Chislett were unanimously elected Representative Members of Council for the year 1933–1934, and Dr. Wm. M. Buchanan was unanimously elected Divisional Secretary.

Dr. C. J. Shaw was unanimously elected Chairman of the Division.

The following were unanimously nominated as members of the Mental Nursing Advisory Committee to the General Nursing Council for Scotland: Drs. Douglas McRae, T. C. Mackenzie, R. D. Hotchkis, Donald Ross and Wm. M. Buchanan. The Divisional Committee of Management was appointed, consisting of the Nominated Member of Council, the two Representative Members of Council, the Divisional Secretary and Dr. T. R. C. Spence.

The following candidates, after ballot, were unanimously admitted ordinary members of the Association:

GEORGE JAMES IRVINE LINKLATER, *O.B.E.*, M.D., M.R.C.P.E., D.P.H., D.T.M., Assistant Medical Officer of Health, Edinburgh; 16, Dudley Avenue, Leith.

Proposed by Drs. H. Ferguson Watson, C. D. Bruce and Wm. M. Buchanan.

JAMES JOHN MITCHELL, M.B., Ch.B.Glas., F.R.I.P.H., Medical Officer, Uganda Medical Service; 14, Norse Road, Scotstoun, Glasgow.

Proposed by Drs. Angus Macniven, Aidan Thomson and Wm. M. Buchanan.

Dr. MARR reminded members that at the approaching Honorary Graduation Ceremony at Edinburgh University Sir Arthur Rose, Chairman of the General Board of Control, would receive

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the degree of LL.D., and suggested that the occasion afforded an opportunity for the Division to show its appreciation of Sir Arthur's services by presenting him with robes for the ceremony. The suggestion was enthusiastically accepted, and the Secretary was instructed to make the necessary arrangements.

Dr. Steele and his assistants conducted members over the hospital.

Members were kindly entertained to lunch in the hospital, after which Provost FISHER, on behalf of the Joint Committee, welcomed members to Melrose; and the CHAIRMAN thanked the Joint Committee and Dr. Steele and his staff for their kind hospitality, and for the arrangements made in connection with the meeting.

After lunch members were kindly taken a motor drive through Bowden, Newtown St. Boswells, Dryburgh and Bemersyde, returning to Melrose by Newstead.

Dr. and Mrs. Steele kindly entertained members to tea.

IRISH DIVISION.

THE SUMMER QUARTERLY AND CLINICAL MEETING of the Irish Division was held at the Donegal District Mental Hospital, Letterkenny, by the kind invitation of Dr. J. C. Martin, on Thursday, July 13, 1933.

There were present the following members: Dr. L. Gavin, in the Chair; Drs. S. Blake, R. D. Brennan, P. J. Cassin, P. J. Courtney, J. O'C. Donelan, J. Dunne, Nora May FitzGerald, John FitzGerald, D. L. Kelly, B. Lyons, R. R. Leeper, Elizabeth Mahony, J. C. Martin, P. Moran, J. C. Osburne, Eveleen O'Brien, F. O'C. Walsh and R. Thompson (Hon. Sec.), and the following visitors: Drs. J. P. McGinley, P. McGarvey, Annie J. Dunlevy, Catherine M. O'Brien and Mr. J. V. Callaghan, L.D.S.

In the forenoon members were conducted over the Hospital, and noted with interest the many beautiful examples of needlework done by the female patients. Later, members and visitors were entertained to luncheon.

The minutes of the previous meeting were read, approved and signed by the Chairman.

The report of the sub-committee appointed to inquire into the question of a central pathological laboratory and other matters was read by Dr. MORAN.

Dr. DONELAN strongly supported the recommendations of the sub-committee for a central pathological laboratory, and stressed the urgent need which existed for such a laboratory, which should be an Irish centre of research into the problems of mental disease.

Dr. DUNNE, Dr. KELLY, Dr. MARTIN, Dr. LEEPER and Dr. MORAN also spoke in favour of the sub-committee's recommendations. Dr. KELLY urged that the Director should be a whole-time officer, and Dr. LEEPER insisted that the research conducted should be primarily into the problems presented by mental disease.

Dr. O'BRIEN, Asst. M.O.H., co. Donegal, pointed out the need she had found for the proper investigation and treatment of mental defect, especially that associated with epilepsy, and she suggested that research into these problems might be carried out in the contemplated laboratory.

Finally, on the motion of Dr. KELLY, seconded by Dr. CASSIN, the sub-committee's report—with some minor emendations—was unanimously adopted. The sub-committee was further instructed to prepare a detailed scheme for the establishment of such a laboratory, and to submit it to the proper authorities.

Arising out of Dr. O'Brien's remarks, a discussion took place on the question of the provision of suitable accommodation for mental defectives.

Dr. GAVIN and Dr. DONELAN stressed the undesirability of admitting youthful defectives to the District Mental Hospitals.

Dr. LEEPER referred to the excellent results he had recently seen in the training of defectives at Colchester.

It was finally decided—on the motion of Dr. MORAN—that the medical superintendents of the district mental hospitals be asked to furnish particulars of the numbers of defectives in these institutions for whom more suitable accommodation should be found elsewhere.

The SECRETARY suggested that it would be desirable to accept nominations for the posts of Divisional Secretary and Representative Members of Council at the November meeting of the Division, in open meeting, as had been the practice for some time in another Division.

This was agreed to.

Dr. LEEPER reported that a badge would shortly be available for the use of the Chairman of the Division.

The Autumn Meeting of the Division was fixed for Thursday, November 2, 1933, at the Royal College of Physicians, Dublin.

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Clinical Meeting.

Dr. Courtney, Assistant Medical Officer, and Mr. J. Vincent Callaghan, L.D.S., Visiting Dental Surgeon to Letterkenny Mental Hospital, presented an interesting communication "On the Advantage of Dental Treatment in its Relationship to Insanity and Nervous Disease". The writers stressed the importance of adequate and skilled dental treatment in nervous and mental disorders, and recorded a number of illustrative cases where gratifying recoveries had followed such treatment. They mentioned the good results obtained by the use of a parodontal vaccine, in conjunction with extraction or other measures.

The paper gave rise to a lengthy discussion.

Dr. Donelan expressed his appreciation of the work of Dr. Courtney and Mr. Callaghan, and stated that their views coincided with his own, that, in a very large percentage of mental patients, a physical cause was operative.

Dr. FitzGerald pointed out the importance of X-ray examination in cases where obvious sepsis was not present.

Dr. Gavin stressed the importance of an untiring search for the signs of physical disease, and of the eradication of the latter, where possible.

Dr. Courtney and Mr. Callaghan replied.

A cordial vote of thanks to Dr. Martin for his very kind hospitality was proposed by Dr. Donelan, seconded by Dr. Leeper, and carried unanimously.

Dr. McGinley, on behalf of the visitors, expressed their great pleasure in being allowed to participate in the meeting.

Subsequently the members, visitors and a number of guests were entertained to tea by Mrs. Martin.

On the following day Dr. Martin motored some of the members who had remained overnight to the surrounding places of interest.

OBITUARY.

Professor Juliano Moreira.

We regret to announce the death of one who had been a Corresponding Member of our Association since 1909, and who was the first Latin American to be elected to that distinction.

Prof. Moreira, who died on May 2, 1933, was born in 1873. He graduated at the Medical School of Bahia in 1891, after having defended a thesis on precocious malignant syphilis, thus giving early proof of interest in the specialty to which he devoted his life. In 1896 he was appointed Professor, having presented an original paper on arsenical dyskinesias, which was described by the late Prof. Alexander Macalister as "a valuable addition to our knowledge of arsenical poisoning". In 1903 he was appointed Director of the Federal Asylum for Mental Diseases. Surrounding himself with a body of enthusiastic colleagues, he modernized that institution, and was instrumental in procuring the enactment of a new statute for the management of psychotic patients in Brazil, which statute inaugurated the voluntary admission of patients. He insisted upon the establishment of laboratories in the various hospitals, and under his supervision lumbar puncture and the examination of the cerebro-spinal fluid was first performed in Brazil. In 1911 he was appointed Director-General of the Department for the Assistance of the Insane—a post which he held until shortly before his death.

Prof. Moreira's work was appreciated in all parts of the world, and he was a member of some thirty learned societies in various countries. The University of Hamburg presented him with a gold medal, and he was a honorary member of the German Red Cross Society. He visited many countries as a lecturer and as a delegate to the meetings of scientific bodies. Apart from his immediate specialty, he was greatly interested in dermatology, and was an eminent historical scholar. He published more than a hundred scientific papers.

Prof. Moreira's death is deeply deplored in Brazil, where he was held in the highest respect. One of his colleagues has gracefully said that to Prof. Moreira "every psychiatrist in Brazil owes part of his knowledge, every psychopath owes some measure of alleviation".

For much of our information we are indebted to Senhora Moreira, to whom we offer our respectful sympathy upon the death of her distinguished husband. M. H. S.

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Psychopathological References for 1932.

English and American.

Members are reminded that the Secretary of the Sub-Committee, Dr. J. Ernest Nicole, Winwick Mental Hospital, Warrington, will be pleased to submit further lists, including the *Monthly Bibliography of the National Committee for Mental Hygiene (U.S.A.)* up to 1932, to any who apply for them. The Book-list, comprising all more important works on Philosophy, Pure and Applied Psychology, Psychiatry and Psychopathology, Educational and Social Psychology, Ethnology, etc., is now complete to December, 1933, and includes 4,000 titles

American Journal of Psychiatry.

Berman, L.—Crime and the Endocrine Glands.
Freedman, B.—Psychiatry of Ultraism.
Henry, G. W.—Mental Phenomena in Brain Tumours.
Hunt, J. R.—Erethizophrenia and Kolyphrenia.
Kennedy, F.—Clinical Convulsions.
Levy, J.—Mental Hygiene Study of Juvenile Delinquency.
Lewis, N. D. C., and Hubbard, L. D.—Epileptic Reactions in the Negro Race.
Notkin, J.—Psychoses and Endocrinopathy.
Thomas, J. M.—A Schizophrenic's " Virgin Mary " Delusions.

American Journal of Psychology.

Bulbrook, M. E.—Experimental Inquiry into Insight.
Feldman, S.—Wundt's Psychology.
Jacobson, E.—Electrophysiology of Mental Activities.
Wang, C. K. A.—Early History and Personality Traits.

Archives of Neurology and Psychiatry.

Muncie, W.—Psycholeptic Attacks.

Brain.

Langworthy, O. R.—Differentiation of Behaviour Patterns in the Fœtus and Infant.
Nelson, H.—The Sympathetic System as an Affective Mechanism in the Region of the Trigeminus.

British Journal of Medical Psychology.

Bragman, L. J.—The Case of Arthur Symons.
Christie, T.—The Psychology of Crime.
Daly, C. D.—Prehuman Psychic Evolution.
Field, H. E.—The Psychology of Crime.
Good, T. S.— ,, ,,
Glover, E.—Problems in Psycho-analysis and Anthropology.
,, The Psychology of Crime.
Rickman, J.— ,, ,,
Suttie, I. D., and J. I.—The Mother: Agent or Object.
Troisier, J.—Menhirs, Trilithons and Dolmens.
Weber, H.—Psychological Factor in Migraine.

British Journal of Psychology.

Brown, W.—Evidence for the Existence of a Central Intellective Factor.
Cattell, R. B.—Temperamental Tests.
Dawson, S.—Intelligence and Fertility.
Glover, E.—Medico-Psychological Aspects of Normality.
Gordon, R. G., and Norman, R. M.—Psychological Experiments in Mental Defectives.
Holman, P.—Mental Development and Manual Dexterity.
Maier, N. K. F.—A Gestalt Theory of Humour.
Pinard, J. W.—Tests of Perseveration.

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BRITISH MEDICAL JOURNAL.

Vol. I.

Brown, Langdon.—The Endocrines and some Associated Psychoneuroses.
Crookshank, F. G.—The Psychological Interest in General Practice.
Forsyth, D.—Diagnosis of Neurotic Conditions in General Practice.
Gantt, W. H.—Conditioned Reflexes and Habit Formations.
Gillespie, R. D.—Occupation and Neurosis.
Moorhead, G.—Menopausal Insanity and Bacterial Toxæmia.

Vol. II.

Bramwell, E.—Disorders of the Sympathetic Nervous System.
Campbell, C. M.—General Practitioner's Approach to his Mental Patients.

INTERNATIONAL JOURNAL OF PSYCHO-ANALYSIS.

Brierley, M.—Problems of Integration in Women.
Freud, S.—Acquisition of Power over Fire.
,, Libidinal Types.
,, Female Sexuality.
Glover, E.—Ætiology of Drug Addiction.
Harnik, J.—Introjection and Projection in Depression.
Muller, J.—Libidinal Development in the Genital Phase in Girls.
Riviere, J.—Jealousy as a Mechanism of Defence.
Weiss, E.—Regression and Projection in the Super-Ego.

JOURNAL OF ABNORMAL AND SOCIAL PSYCHOLOGY.

Drever, J.—The Nature of Emotion.
Fletcher, J. M.—Dunlap's Theory of Habit Control.
Granich, L.—Translation of Psycho-Analytical Concepts.
Sapir, E.—Cultural Anthropology and Psychiatry.

JOURNAL OF COMPARATIVE PSYCHOLOGY.

Brown, C. W.—Nervous Mechanism for Emotional Responses.
Dodson, J. D.—Value of Motives in Learning Processes.
Fields, P. E.—Discrimination of Geometrical Figures by Rats.
Maslow, A. H., and Harlow, H. F.—Comparative Behaviour of Primates.
Telford, C. W.—Test Performances of North Dakota Indians.

JOURNAL OF MENTAL SCIENCE.

Glover, E.—An Approach to a Psycho-analytic Classification of Mental Disorders.
Macdonald, J. H.—Affect and Emotion.
Stephenson, W.—The P-Factor in Psychiatry.

JOURNAL OF NERVOUS AND MENTAL DISEASES.

Getson, P.—The Neurotic Criminal.
Malamud, W., and Palmer, G.—Masturbation in the Causation of Mental Disturbances.
Pfister, O.—Instinctive Psycho-analysis among the Navahos.
Schroeder, T.—Divinity in Semen.
Vessie, P. R.—Individual Factor in Manic Reactions.

JOURNAL OF NEUROLOGY AND PSYCHO-PATHOLOGY.

Editorial.—The Menopause and Mental Disorders.

LANCET.

Vol. I.

Chambers, W. D.—Case of Hysterical Fugue.
Stephens, H. F.—Treatment of Persistent Offenders.

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Vol. II.

Brown, W.—Suggestion, Hypnotism and Will.
Jones, E.—The Nightmare.
Rees, J. R.—Psychological Factors in the Prevention and Treatment of Alcohol and Drug Addiction.

MENTAL HYGIENE.

Broadwin, I. T.—The School Clinic in Educating Teachers.
Brown, F. W.—Personality Integration in Stuttering.
Hall, D. E., and Mohr, G. J.—Prenatal Attitudes of Primiparæ.
Levy, J.—Conflicts of Culture.
McCormick, M. J.—Measuring Social Adequacy.
Myerson, A.—Sanity in Mental Hygiene.
Noble, R. A.—Psychiatry in Medical Education.
Watson, G.—A Critical Note on Two Attitude Studies.
Zachry, C. B.—Art in Personality Development.

PHILOSOPHY.

Drever, J.—The Present Position in Psychology.
Kaye, M.—Tradition.

PSYCHE.

Buchanan, S.—Freudian Dynamics.
Dingwall, E. J.—The New Witchcraft.
Lawton, G.—Psychical Researchers as Spiritual Theologians.
Oeser, O. E.—Social Psychology as an Experimental Science.

PSYCHOANALYTIC REVIEW.

Clark, L. P.—Psychology of Idiocy.
Federn, P.—Reality of the Death Instinct.
Lawton, G.—Psychology of Spiritualist Mediums.
Muller-Braunschweig, C.—Groundwork of the Religious Attitude.
Reiser, O. L.—Biological Origins of Religions.
Schroeder, T.—A "Living God" Incarnate.
Wittels, F.—The Lilith Neurosis.

PSYCHOLOGICAL REVIEW.

Bernard, L. L.—Evolution of Social Consciousness.
Granich, L.—Analysis of Motivation.
Gray, J. S.—Behaviouristic Interpretation of Intelligence.
Gregg, F. M.—Materializing the Ghost of Gestalt Psychology.
Harlow, H. F., and Stagner, R.—Theory of Feelings.
Hunter, W. S.—Psychological Study of Behaviour.
Israeli, N.—Psychopathology of Time.
Johnson, H. M.—Some Follies of Emancipated Psychology.
Klein, D. B.—Scientific Understanding in Psychology.
Taylor, W. S.—Alternative Response as a Form of Sublimation.
Washburn, M. F.—Ejective Consciousness in Social Psychology.
White, C. M.—Categories of Substance, Cause and Function in Freud's Psychology.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE.

Forsyth, D.—Psychology in the Medical Curriculum.
Glover, E.—Principles of Psychiatric Classification.
Lewis, A.—Experience of Time in Mental Disorder.
Nicole, J. E.—Sources of Misunderstanding in Psycho-pathology.

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Books Added to the Library.

The Library Committee gratefully acknowledge the following gifts to the Library:

Presented by Dr. J. R. Whitwell:

Lavater, J. Caspar. *Essays on Physiognomy, including Mental Cases.* London, 1797.
Zimmerman, M. *Solitude, Effect on Mind.* London, 1804.
Anon. *Essai philosophique sur l'âme des bêtes.* Amsterdam, 1728.

Circulation of Journals.

The following journals are circulated from the Library:

American Journal of Psychiatry.
The Psychological Review.
Journal of Neurology and Psychopathology.
L'Encéphale.
International Journal of Psycho-Analysis.
Journal of Abnormal Psychology.
Mental Hygiene.
Journal of Nervous and Mental Diseases.
Revue Neurologique.
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Bronze Medal and Prize for 1934.

Dissertations for the Association's Bronze Medal and Prize must be delivered to the Registrar by April 30, 1934.

Divisional Prizes for 1934.

Papers certified as eligible for this competition must be forwarded to the Registrar not later than April 30, 1934.

Gaskell Medal and Prize.

The examination for the Gaskell Medal and Prize and the examination for the Certificate in Psychological Medicine will be held in May, 1934.

Applications for entry to each examination to be made to the Registrar, St. Andrew's Hospital, Northampton.

There is no fee for entrance to the Gaskell Prize Examination.

The entrance fee for the examination for the Certificate in Psychological Medicine is three guineas.

NOTICES BY THE GENERAL SECRETARY.

Deaths.

JOHN PATRICK.

Appointment.

G. W. SHORE, M.D.Lond., D.P.H., D.P.M., to be Medical Superintendent, Middlesex County Mental Hospital, Shenley.

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INDEX TO VOL. LXXIX.

The General Index now covers original articles, reviews and the epitome, and includes subjects dealt with as well as the titles of articles.

The following names are printed in SMALL CAPITALS: authors of original articles and of books reviewed, and the subjects of obituary notices. Names of authorities referred to in the text are in ordinary type.

(R.) indicates a *Review*; the title of the book reviewed is followed by the author's name, thus: "Psycho-analysis and its Derivatives, by H. Crichton-Miller (R.)".

(E.) indicates the *Epitome* section; the title of the abstract is followed by the author's name, thus: "Age and human ability. Miles, W. R. (E.)".

(O.) indicates an *Obituary* notice.

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